Marine Engineering
And Shipping Age

Vol. XXXII **MAY, 1927** **No. 5**

	Page
Editorial Comment What next? Cramp's Shipyard. Navy yard cruiser contracts. Metallurgy and shipbuilding. *Marine Engineering and Shipping Age*, May, 1927.	247
Merchant Fleet Corporation, Another Shake-up In By Harold F. Lane. Vice president Philbin ousted. E. A. Kelly appointed director of operations. President Dalton to supervise shipping sales. Activities abroad to be under district directors. *Marine Engineering and Shipping Age*, May, 1927.	251
Tanker Gulfpride, The Motor Plans and description of 16,700-ton motor tanker built by Federal Shipbuilding and Dry Dock Company for the Gulf Refining Company. Hull built on the Isherwood bracketless system of longitudinal framing. Bethlehem engines installed for propulsion. 14 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	253
Cargo Steamship A. F. Harvey, Bulk Plans and description of 600-foot bulk freighter under construction by the Great Lakes Engineering Works for the Pittsburgh Steamship Company. 6 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	261
Warship Now a Hotel U. S. S. *Amphitrite* dismanteled and converted into floating hotel for southern resorts. 1 illustration. *Marine Engineering and Shipping Age*, May, 1927.	263
Passenger Steamship New York Latest addition to the Hamburg-American transatlantic fleet a duplicate of the *Hamburg* which went into service a year ago. 7 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	265
Ferry Boat Quillayute Largest vessel for Puget Sound service ordered in 1926 equipped with Washington-Estep Diesel engines. 2 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	267
Motorship Disko Built for Arctic Service First combined passenger and cargo Diesel-engined ship for trading between Copenhagen and Greenland. 5 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	269
Turbines, Westinghouse Small Size Geared *Marine Engineering and Shipping Age*, May, 1927.	270
Barges Tested at Mobile, Centerboard *Marine Engineering and Shipping Age*, May, 1927.	270
Auxiliaries, Electrical Deck By A. O. Loomis. How the deck machinery on Shipping Board Diesel converted ships was changed to electric drive. 5 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	271
Fire Detecting System, Garrison *Marine Engineering and Shipping Age*, May, 1927.	273
Radio Beacon, Kolster Ship *Marine Engineering and Shipping Age*, May, 1927.	274
Rubber Bearings, Cutless By Burton B. Annis. Explains how their use in marine propeller shaft bearings lessens wear and vibration. 8 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	275
Contra-Propellers Increase Liner's Speed *Marine Engineering and Shipping Age*, May, 1927.	277
Yacht for Vincent Astor, Large Diesel *Marine Engineering and Shipping Age*, May, 1927.	277
Pulverized Coal Installation, First By Commander Warren C. Graham, U. S. N. R. Details of first pulverized coal installation on board ship and proposed tests. *Marine Engineering and Shipping Age*, May, 1927.	278
Shipbuilding in France *Marine Engineering and Shipping Age*, May, 1927.	278
Inclining Experiment By Lieutant Commander G. C. Manning, C. C., U. S. N. Details of inclining experiments on the battleship *Florida* upon completion of major alterations. *Marine Engineering and Shipping Age*, May, 1927.	279
Sounding Rod, A Useful *Marine Engineering and Shipping Age*, May, 1927.	279
Cleaning Hull of Washington Irving Description of methods employed in cleaning the interior of the hull of the salvaged steamer *Washington Irving* after several months submergence in the Hudson river. 5 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	280
Salt Detector for Boiler Feed Water *Marine Engineering and Shipping Age*, May, 1927.	281
Diesel Engines for Rival Italian Liners By Our Special London Correspondent. Propelling and auxiliary machinery of the two largest oil-engined passenger ships in the world. 3 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	282
Diesel Engines, Small Power, High Speed Description of 4 and 6 cylinder Hill Diesel engines developed for yachts, tug boat and work boat service. 6 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	285
Welder, Monarch Air Cooled Arc *Marine Engineering and Shipping Age*, May, 1927.	286
Trials and Service Performance, Ships' By E. V. Telfer. Second instalment of paper on the practical analysis of merchant ship trials and service performance. 3 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	287
Critical Speeds—I By F. McAlister. Investigation to determine speeds at which humps and hollows occur. Recapitulation of main features underlying interference phenomena. 2 illustrations. *Marine Engineering and Shipping Age*, May, 1927.	291
Merchant Marine Decreases, American *Marine Engineering and Shipping Age*, May, 1927.	293
Conduit Fittings, Crouse-Hinds *Marine Engineering and Shipping Age*, May, 1927.	293
Questions and Answers for Operating Engineers Practical information for marine engineers on the operation and maintenance of boilers, engines and auxiliaries. *Marine Engineering and Shipping Age*, May, 1927.	294
Questions and Answers	296
Letters to the Editors	296
Personal	297
Shipping and Shipbuilding News	300
Great Lakes Notes	307

Simmons-Boardman Publishing Company
30 Church Street, New York, N. Y.

EDWARD A. SIMMONS, President — HENRY LEE, Vice-President and Treasurer — C. R. MILLS, Vice-President
L. B. SHERMAN, Vice-President — SAMUEL O. DUNN, Vice-President — ROY V. WRIGHT, Secretary
F. H. THOMPSON, Vice-President — GEORGE SLATE, Business Manager

CHICAGO: 608 South Dearborn St. — WASHINGTON: 17th and H Sts., N. W. — LONDON, England: 34 Victoria St. Westminister, S. W. 1.
CLEVELAND: 6007 Euclid Avenue — SAN FRANCISCO: 74 New Montgomery St. — Cable address: Urasigmec, London.
MANDEVILLE, LA.

Subscription price: United States, Canada and Mexico $3.00; foreign countries, $4.00 a year. When paid through the London Office, 34 Victoria Street, S.W. 1, 17s. 0d. Single Copies, 35 cents, or 1s. 6d.

Generated on 2024-09-12 12:31 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Marine Engineering
and Shipping Age

Volume XXXII **May, 1927** **Number 5**

Published Monthly by
SIMMONS-BOARDMAN PUBLISHING COMPANY
30 Church Street, New York
JAMES SWAN, H. H. BROWN } Editors
L. S. BLODGETT, Associate Editor

Subscription price: United States, Canada and Mexico, $3.00; foreign countries, $4.00. Single copy, 35 cents. Foreign subscriptions may be paid through our London Office, 34 Victoria Street, S. W. 1, in £ s. d.

MARINE ENGINEERING AND SHIPPING AGE is a member of the Associated Business Papers, Inc. (A. B. P.), and the Audit Bureau of Circulations (A. B. C.).

Request for change of address should reach us two weeks before the date of the issue with which it is to go into effect. It is difficult, and often impossible, to supply back numbers to replace those undelivered through failure to send advance notice. In sending us change of address, please be sure to send us your old address as well as the new one.

What Next?

IN announcing last month the discontinuance of shipbuilding at Cramp's shipyard, J. Harry Mull, president of the company, declared that the world-wide limitation of naval armaments and the lack of prospective orders for merchant vessels made the continuance of the extended facilities of the shipyard unjustifiable. That this famous yard, with its enviable history and wealth of tradition, should be forced, in an era of prosperity and industrial progress, to end its career from lack of business is one of the strongest indictments against the nation's maritime policy, or lack of policy, that can be found. If Cramp's must go, what next?

A forecast of what the future held in store for the shipbuilders in the United States was given by one of the leaders in the industry in a speech before the Society of Naval Architects and Marine Engineers shortly after the world war. Without mincing matters he pointed out the disparity between the capacity of the shipyards as they then existed and the normal requirements of the country for new vessel tonnage. Making every possible allowance for exceptional demands by the rapid growth of shipping and the early replacement of existing tonnage there was shown to be only one logical outcome for the situation and that was the fast approaching necessity for closing up many of the existing shipyards and the curtailing of the remaining facilities within limits more nearly commensurate with the actual demands for their services. Only then, it was pointed out, could the shipbuilding facilities be operated efficiently and with any hope of financial success.

How accurate this forecast of coming events has proved to be is shown by the history of the shipbuilding industry during the succeeding years. Few shipbuilders at that time, however, buoyed up by war prosperity and visions of a rapidly growing merchant marine, were willing to admit the possibility of defeat at the hands of the relentless law of supply and demand. Optimism veiled the darkening clouds of world-wide depression in shipping and hope fathered the conviction that if any one should be forced to quit it would be some other less resourceful shipbuilder. As a result most of the old established yards have put up a bitter fight for survival against the keenest sort of competition for the few contracts available and with small hope of profits for the successful bidders. With practically no support from the government from that day to this the shipbuilding industry has been slowly starving to a shadow of its former self as one after another of the shipyards has quietly passed out of existence or gone into other lines of work. Such has been the fate of the old Roach yard, the Sparrows Point, Harlan and Moore plants of the Bethlehem Shipbuilding Corporation and the Bath Iron Works, to mention only a few of the more important ones on the Atlantic Coast, and now Cramp's is added to the list.

Hope continued of course for some time after the war that the American people would recognize the opportunity fate had thrown in their path to secure a permanent place in the sea-borne commerce of the world and to establish through their representatives in Washington a sound workable basis upon which American shipping could compete in overseas trade and serve the nation's commercial and military needs adequately. Such hopes were certainly justified at the time. Other maritime nations lost no time in making every possible effort to restore their strength upon the high seas. The opportunity was there for American shipping and in view of the progress that had been made in shipbuilding and shipping both during and immediately after the war it seemed wholly improbable that the nation's grasp upon a substantial portion of the world's carrying trade would be relinquished without the Government taking proper measures to safeguard its newly created merchant marine and to provide for its future growth.

But the American people repeatedly turned a deaf ear to the pleas of the shipping advocates and as each succeeding attempt to secure government support failed the shipbuilders were thrown upon their own resources to make such a living as they could in providing tonnage for domestic shipping. For many it was a losing game and, as one after

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

another of the shipyards went out of business the country lost not only the mechanical facilities which they provided for building ships but also something of even greater importance and that was the services of the skilled and trained organizations which operated them. How great this loss is is well known to those who are familiar with the intricacies of shipbuilding; for it takes years to train competent men for holding responsible positions in the shipyards and to build up efficient organizations for their economical operation. Another handicap also developed in this bitter struggle of the shipyards for existence and that was the adoption by many of them of the suicidal practice of taking contracts at less than rock bottom prices and in so doing attempting the useless expedient of cutting each other's throats. As stated in these columns in a previous issue, nothing can justify such a policy and its continued and persistent practice leads nowhere but to ruin.

This country needs ships, and needs them badly, not only for the enlargement of existing services but also for the replacement of tonnage which is rapidly becoming obsolete or is unsuited for the service in which it is engaged. Eventually these ships will be built, but in the meantime the shipbuilding industry must put its house in order, eliminate the harmful practices that have been slowly but surely sapping its life blood and make every effort to conserve its resources so that when the Government decides to take hold of its shipping problems in earnest the country will not be bereft of shipbuilding facilities nor will the industry itself be found in a chaotic state of disorder.

Cramp's Shipyard

THE decision of the William Cramp & Sons' Ship and Engine Building Company to discontinue shipbuilding marks the passing of one of the oldest and most famous landmarks in the shipbuilding industry in the United States. For nearly a century Cramp's has been a household word throughout the country wherever deep sea ships or shipping were concerned. Its activities have been so closely interwoven with the development of the navy and merchant marine that it has become recognized as an indispensable unit in the maritime resources of the nation. Its fame both here and abroad has rested not only upon the magnitude of its operations but also upon the skill and fair dealing which, from its pioneer days, have marked its successful growth.

The shipyard was founded in 1830 in Philadelphia by William Cramp. Originally located at the foot of Otis street (now East Susquehanna avenue) and later at the foot of Palmer street (the present site of the company's dry dock and repair plant) the plant of the early days bore little resemblance to the immense establishment of today. From the first, however, the founder, who was a master of the art of shipbuilding, set the example of turning out the best ships that could be built and this example has been religiously followed throughout the long life of the yard. To say that a ship was built at Cramp's has signified that the vessel entered its eventful life with the best heritage in design and workmanship that could be obtained.

In 1872 the business had outgrown the Palmer street yard and about one-third of the water front of the present establishment was purchased. In March of that year the company was incorporated under its present name. William Cramp died in 1879 and Charles H. Cramp, his eldest son, succeeded to the presidency. For twenty-four years he was the active head of the business. Under his management, in 1891, the company obtained control of the I. P. Morris Company—a firm which manufactured special types of machinery and which had been a neighbor of the yard ever since it was founded. In 1900 the Cramp company purchased the Charles Hillman Ship and Engine Building Company which was reorganized and incorporated as the Kensington Shipyard Company, comprising the dry dock and repair yard at the foot of Palmer street. In 1917 the Morris company and the Kensington Shipyard Company were dissolved as corporations and have since been known as departments of the Cramp shipyard. In 1903 Henry S. Grove succeeded to the presidency. He was followed in 1916 by Harry W. Hand and in 1917 by J. Harry Mull, the present president of the company.

At the beginning of the World War the shipyard comprised 8 building slips and employed an average of about 5,000 workmen. During the war the number of employees averaged from 10,000 to 11,000. Upon the entrance of the United States into the war the activities of the yard were directed chiefly to the building of torpedo boat destroyers and it became necessary to enlarge the plant as much as possible to maintain the required rate of construction. The 8 building slips were reconstructed so as to accommodate from 1 to 3 destroyers at one time on each slip. Two of the ways were torn down and concrete slips of the latest improved type constructed. Traveling cranes were erected over all the slips to speed up the handling of material. As it was impossible to extend the area of the yard in either direction it was necessary to utilize every available space and consequently a number of old shops were torn down and new shops built. Among these was a new fabricating shop with a capacity of 150 tons of fabricated material per day. New storehouses, blacksmith shops, coppersmith shops, joiner shop, machine shop, traveling cranes and power houses were built and the whole coordinated into a huge efficient unit.

The vessels built at the yard during its long and eventful career comprise an imposing list and include many warships for the United States and foreign navies, transatlantic liners, cargo and passenger steamships, tugs, yachts, sailing vessels and many craft for various special uses. Especially noteworthy were the famous transatlantic liners *St. Paul* and *St. Louis*, the first of which at one time held the transatlantic record for speed; the battleships *Indiana* and *Massachusetts*, which were the first battleships of the rehabilitated Navy; the historic armored cruiser *New York*, which was Admiral Sampson's flagship during the Spanish-American war; the Russian warships *Variag* and *Retvizan*; several light cruisers for the Japanese and Turkish governments and later the first of the American dreadnoughts, the *South Carolina*, as well as the flagship *Wyoming*. The type of destroyer built during the war, of which 46 were

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

completed, was of about 1,100 tons displacement with a contract speed of 35 knots. One of these, the *Cole,* maintained a speed of 41.1 knots between 14 Fathom Bank and Brandywine Shoals Light, making the distance of 4.8 nautical miles in 7 minutes ⅖ second. On trial the speed was between 36 and 37 knots. Among the more recent passenger vessels built were the *Siboney and Orizaba,* the *Santa Luisa, Santa Teresa* and *Santa Malta* and the express liners *Great Northern* and *Northern Pacific.* The latter were 500 feet in length, carried 580 passengers and had a contract speed of 23 knots. So far as is known no other seagoing passenger vessels of this length have approached the speed made by the *Great Northern* and *Northern Pacific.* Other transatlantic vessels having the same or higher speed have been over 700 feet in length.

The work under construction in the yard just prior to the announcement of the discontinuance of shipbuilding included the Matson liner *Malolo;* two passenger ships for the Eastern Steamship Company; a 10,000-ton cruiser for the United States Navy and the propelling machinery for a similar cruiser building at the New York Navy Yard. Work on these contracts during the last two years, when the company was unable to secure additional shipbuilding contracts, resulted in substantial losses, consequently the naval contracts have been surrendered and a reorganization and financing plan has been worked out which provides for the underwriting of $2,500,000 of bonds to enable the company to complete the work now under construction and to satisfy all outstanding commitments. It is gratifying to know that the manufacturing operations of the company's subsidiaries, which are in a sound and prosperous condition and are capable of considerable expansion, will be continued. These include the De La Vergne Machine Company, the I. P. Morris Corporation, the Pelton Water Wheel Company, the Federal Steel Foundry Company, Cramp's Brass & Iron Foundry and the Cramp Engine Manufacturing Company.

Cramp's, however, has turned out something besides ships; it has trained and educated in the hard school of experience hundreds of men who have gone out into the shipbuilding industry and become engineering and executive leaders. These men, schooled to meet the exacting standards at Cramp's, have seldom failed to make good in their chosen calling and the production of this trained shipyard personnel has proved to be not the least of the invaluable services for which the country is indebted to Cramp's.

Navy Yard Cruiser Contracts

THE Navy Department's decision to build two of the six cruisers, recently contracted for, at government Navy Yards is disheartening to the private shipbuilders, to say the least. If there were any evidence to show that these vessels could be built for less money in a Navy Yard than in a private shipyard, the private yards would have less cause for complaint but almost invariably vessel construction in a Navy Yard takes more money out of the taxpayers' pockets than is the case when the work is done in a private yard. Under these circumstances others besides the shipbuilders have a right to question the policy of the Navy Department in this matter.

The controversy between the shipbuilders and the Government over shipbuilding in the Navy Yards is of long standing and it will undoubtedly continue just as long as the Navy Department authorizes such work in the Navy Yards. During the decade before the World War three battleships were built at the New York Navy Yard and in each instance the cost of construction exceeded, by a wide margin, the cost of sister ships built in private yards. The *Connecticut* cost $374,000 more than the *Louisiana* built by the Newport News Shipbuilding and Dry Dock Company, the *Florida* cost $2,269,000 more than the *Utah* built by the New York Shipbuilding Company, and the *New York* cost $1,463,000 more than the *Texas* built by the Newport News Shipbuilding and Dry Dock Company. In the case of the present cruiser contracts, J. W. Powell, former head of the Bethlehem shipbuilding activities, states in an open letter to the Secretary of the Navy that it is his unqualified belief that in the award of two of the cruisers to Navy Yards the taxpayers of the United States have lost not less than $6,000,000.

Just as long as Navy Yard shipbuilding operations continue to show a loss, when the costs are figured on the same basis as in a private commercial yard, there is little excuse for continuing to build ships in the Navy Yards.

Metallurgy and Shipbuilding

OF recent years, the development of practically every branch of constructive engineering has been characterized by a growing tendency to draw from the store of knowledge of other and often quite unrelated sciences in the attempt to successfully solve the many and increasing problems which the demands of service and the pressure of increasing and intensive competition are constantly bringing to the engineer.

Industrial engineering and manufacturing owe to the chemist and the metallurgist much of the perfection that they have attained, indeed when one gets below the surface in the study of the details of any of their many branches he is quite sure to find that arts and sciences which to the casual observer appear far removed have played an important part in making possible the final results obtained—be these results structures, tools, machinery or ships!

Of all the sciences, metallurgy has without doubt been the largest "outside" contributor in making possible the modern ship and in perfecting her hull and machinery. Dating from the replacement of wooden hulls by iron and of sails by steam the progress in hull construction and in the building of machinery has been, in largest part, timed by the ability to produce satisfactory metals. By far the most important step, so far as the shipbuilder has been concerned, was the production of mild steel. In the early days, the "iron age" of shipbuilding, the making of iron plates appears as an art rather than a science. Iron was either cast or wrought and that, so far as the practical man was concerned, was about all there was to it. Variation in quality to meet definite requirements was but little under-

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

stood and at best a rather haphazard matter; the ability to produce iron for structural purposes was limited rather by the mechanical processes employed in its manufacture than by chemical or metallurgical considerations which as yet were but little understood or appreciated. With the advent of low carbon steel as a structural material all this was changed. For a material where fitness was measured mainly by its purity and whose physical properties, once purity was obtained, were susceptible of relatively slight variations was substituted one in which the absence of impurities and consequent homogeneity were a direct result of the process of manufacture and whose physical qualities could, within wide limits, be definitely fixed by variations in the chemical compositions of the product.

The main reason for adopting steel in place of iron for ship construction, aside from its greater tensile strength, was its more uniform and dependable quality. To the latter perhaps as much as to the former property was due the reduced scantlings and consequent smaller hull weights which the introduction of steel made possible. The manufacturer of ship steel, for many years following its introduction, was mainly concerned with the control of its carbon content and the elimination of sulphur and phosphorous. The ultimate strength was pretty well fixed in the neighborhood of 60,000 or 65,000 pounds per square inch; a greater tensile strength could be obtained by increasing the carbon percentage but at the expense of very necessary ductility. In the meantime, ships were steadily increasing in size and greater strength with relatively less weight became desirable—for further progress in some directions was essential. It is here that the metallurgist has stepped in with very material aid for the shipbuilder. It is found that by the addition of small quantities of certain other metals to mild steel its ultimate strength and also its elastic limit can be very greatly increased without seriously affecting the ductility of the metal. The raising of the elastic limit is of particular importance as in structures which are submitted to repeated or varying stress it is upon this property, rather than the ultimate strength, that working loads must be predicated. Thus various types of the so-called "high tensile" steels have come into use, designated in accordance with the particular ingredient made use of to obtain the desired physical characteristics as manganese, nickel, chrome or vanadium steels. Still further refinements result in the combination of more than one of these elements with the steel, giving chrome-nickel, chrome-vanadium steels and so forth. For the hulls of light, high powered vessels, such as destroyers and high speed cruisers, the high tensile steels have come into general use for sheer strakes, deck stringers and other similar members which are called upon to resist heavy tensile stress. In this connection, it is of interest to note that high tensile steel has about the same modulus of elasticity as ordinary carbon steel and in consequence is little, if any, better to resist compression than the latter. For this reason, the reduction in cross sectional area made possible by greater tensile strength may have to be accompanied by special framing or structural arrangements in order to resist compression stresses.

Another, and quite different modification of structural steel, also due to the metallurgist, is the copper bearing steel which of recent years has come into extensive use for structural work ashore. In this case the alloy is not made with the intention of increasing strength; in fact, the small amount of copper used has little effect upon the physical properties of the material; but for the purpose of improving its weather resisting qualities. Unfortunately, as was mentioned in a previous article, the copper bearing steel, when immersed in salt water, is likely to promote active corrosion in ordinary steel with which it is in contact, particularly rivets. As large amounts of copper bearing scrap find their way into the steel mills much ship steel now contains copper and serious rivet troubles have ensued. This difficulty is being met by the use of low potential iron rivets thus transferring the destructive electrolytic action from the rivet to the less easily damaged plate surrounding it. Copper bearing steel rivets are being experimented with to the same end but as yet have not been extensively used.

In the construction of engines and other machinery the alloy steels are of even more importance and with their qualities fully developed by modern heat treatment are to be found in crank shafts, connecting rods, roller bearings and in fact in every use for which a steel forging is suitable.

Another development in modern marine engineering which has made necessary the production of a particular and very special form of high grade steel is the rapid increase in both pressures and temperatures which the materials entering into the construction of certain parts of propelling machinery are called upon to withstand. While this is most obvious in internal combustion machinery it applies with scarcely less force to the modern steam plant. Turbine blading, valves and in fact every portion of the modern steam plant coming into direct contact with the steam itself must successfully endure the combined action of pressures and temperatures far beyond the capabilities of ordinary steel to withstand continuously. Thus the efforts of the metallurgist have been directed to the production of steel alloys and bronzes capable of retaining their initial strength and ability to resist erosive action when submitted to temperatures of 700 or 800 degrees in the steam turbine and a still greater heat in the internal combustion engine.

The work of the metallurgist in developing the various brasses, bronzes and other non-ferrous alloys which enter into the construction of ships and their machinery is so extensive that to attempt to describe it is beyond the compass of a short article. Its effect upon ship construction has been far reaching and one has but to mention the various high tensile bronzes, extruded metal sections and the production of condenser tubes to indicate the wide range of influence which, in this department, the metallurgist has had upon the work of both the ship and the engine builder.

It is the almost universal testimony of engineering history that as new requirements have arisen means of successfully meeting them have soon been found. Nowhere is this more conclusively demonstrated than in the manufacture of the various metals which enter into marine construction.

Generated on 2024-09-12 12:40 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Another Shake-up in the Merchant Fleet Corporation

Vice-President Philbin ousted—E. A. Kelly appointed director of operations—President Dalton to supervise ship sales—Activities abroad to be under district directors

By Harold F. Lane

WASHINGTON, D. C.

ANOTHER shake up in the organization of the Shipping Board's Merchant Fleet Corporation was announced on April 12 and following days, by which E. A. Kelly, vice president of the Clyde Line, was appointed director of operations and the ship sales division was transferred to the direct supervision of President Dalton of the Fleet Corporation, while the inactive fleet division was transferred to the division of operations. Mr. Kelly succeeded, effective April 19, James A. Wilson, who resigned, and the resignation of J. Harry Philbin, who had been in charge of the ship sales division, as trustee and vice president of the corporation, was later accepted, effective on April 20. J. C. Jenkins and E. A. Kelly became vice presidents of the corporation on April 26.

At the same time President Dalton announced that R. W. Malone had resigned as manager of the ship sales division and that Captain J. M. Blankenship had been appointed acting manager, while other changes were made in the district managerships. President Dalton said he expected the consolidation of the operating and fleet departments would effect a very large reduction in the cost of maintenance. There were about 1,500 people employed in the laid-up fleet division and the expense has been running about $3,000,000 a year. It was also announced that a European director to succeed Joseph E. Sheedy, who recently resigned, would not be appointed, but that instead of having one director, with headquarters in London, directors would be appointed for each of four European districts to be created, while two districts would be created in South America in place of one.

Outline of Department Organization

In a general order issued to the heads of departments and district directors on April 16, General Dalton outlined the new duties of district directors, giving them full authority and responsibility for all of the activities of the Merchant Fleet Corporation in their districts, as district representatives of the president of the corporation. He also issued a memorandum outlining the departmental organization, as follows:

1. The instructions issued under date of August 16, 1926, outlining the organization of the Merchant Fleet Corporation are amended as hereinafter indicated. Changes in the organization are also outlined in chart approved April 12, 1927, which is issued supplementary to these instructions.

2. The activities of the Merchant Fleet Corporation will be grouped and assigned to the following Offices and Departments: Office of the Secretary, Executive Department, Traffic Department, Operations Department, Supply Department, Finance Department, Comptroller's Department, and Insurance Department.

The Office of the Secretary will embrace all administrative activities not otherwise assigned, and other duties of a special character assigned to the Secretary.

The Executive Department will embrace all activities of a general executive character not specifically assigned to other Departments.

The Traffic Department will embrace all traffic activities of the Merchant Fleet Corporation.

The Operations Department will embrace all activities pertaining to operation, movement, maintenance, and repair of all active and inactive vessels of the Merchant Fleet Corporation; all stevedoring activities; the maintenance and operation of terminals and other property placed under the jurisdiction of the Corporation.

The Supply Department will embrace all the activities pertaining to the purchase or procurement of supplies and materials for the Merchant Fleet Corporation, including all supplies for the United States Lines. This department will be charged with all matters pertaining to the procurement of supplies from the date of the receipt of requisition to the actual delivery of supplies to the using department or service.

The Finance Department will be charged with all matters pertaining to the financial transactions of the Merchant Fleet Corporation. These activities will include the preparation of annual or special estimates, matters pertaining to the budget, disbursements, collections, fidelity bonds, and other activities pertaining exclusively to financial transactions.

The Comptroller's Department will embrace all the activities pertaining to audit and accounting for the Merchant Fleet Corporation.

The Insurance Department will embrace all activities pertaining to marine insurance, compensation insurance, and other insurance activities of the Merchant Fleet Corporation.

3. The heads of the Departments as indicated will submit to the President on April 20, 1927, an outline chart of the proposed interior organization of their respective departments.

4. The necessary administrative orders to make effective the organization as outlined in these instructions and chart of organization approved April 12, 1927, will be issued so as to make the new organization fully effective May 1, 1927.

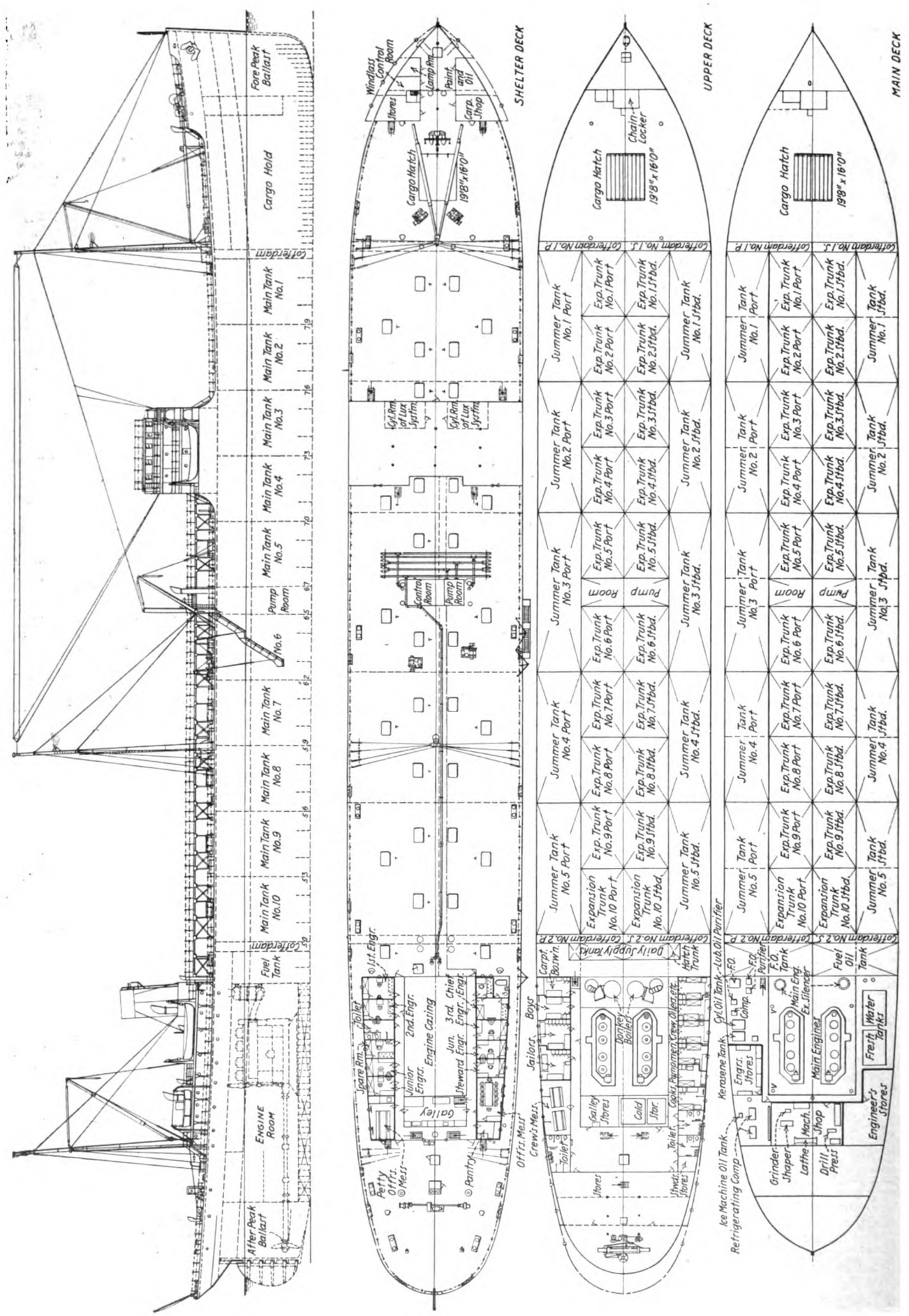
No specific duties were allocated to Mr. Philbin and he submitted a resignation effective on April 30, but President Dalton in accepting it advanced the date to April 20. Mr. Philbin then wrote a letter saying he did not recognize the power of the president to change the date, but on April 21 the Shipping Board issued a statement announcing that it had "ratified the action of the trustees of the Merchant Fleet Corporation yesterday in accepting the resignation" effective at once, and that it had also ratified the acceptance of James A. Wilson's resignation as a member of the board of trustees and the appointment of Mr. Kelly in his place.

Mr. Philbin made public a letter addressed to the board stating that the situation prevailing in the Merchant Fleet Corporation was, in his judgment, "incompatible with the public interest," and that General Dalton's reorganization of the ship sales division compelled him to believe that its purpose was "to stultify and discourage the sale of ships, with a view of substituting a permanent government operation policy, such as in my judgment is not warranted by existing law."

Transport Transfer Opposed

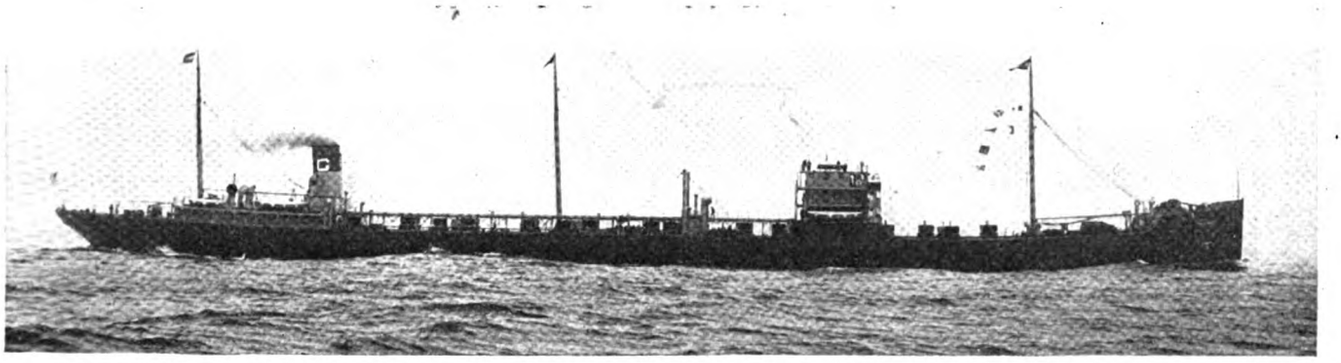
Brigadier-General H. C. Smither, chief co-ordinator of the United States, has addressed a letter to Chairman O'Connor of the Shipping Board saying he could not give approval to the proposal that the transport services of the Army and Navy be transferred to the Shipping Board for operation in connection with the operation of merchant shipping services. He said in part that "the fact was quite convincingly established in conference that ships of the character under discussion are an integral part of the military, naval and Panama canal establishments; indispensable to them in the discharge of their normal responsibilities, and in no way related to the merchant fleet of potential war-time transports." He added that "the very nature of their responsibilities is such that none of these establishments can afford to risk reliance upon ships over which they do not exercise the power of command."

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Profile and deck plans of motor tanker Gulfpride

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Motor tanker Gulfpride on trial trip

The Motor Oil Tanker Gulfpride

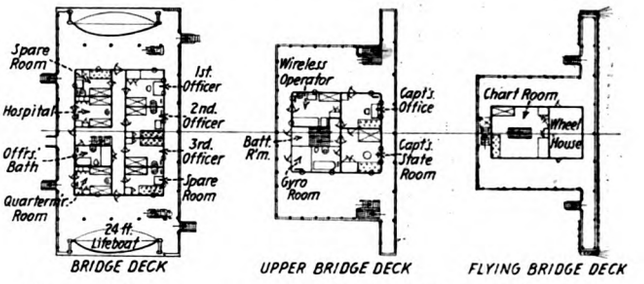
Built by the Federal Shipbuilding and Dry Dock Company for the Gulf Refining Company

THE motor tankship *Gulfpride*, which has just been completed by the Federal Shipbuilding and Dry Dock Company, Kearny, N. J., for the Gulf Refining Company, New York, is noteworthy not only because she is the largest motor tanker so far built in the United States but also because she is the first tanker to be built in this country on Sir Joseph Isherwood's new "bracketless" system of longitudinal framing. The vessel is propelled by two Bethlehem four cylinder, two cycle, single acting Diesel engines. As she is destined for carrying cargoes of gasoline and it was stipulated that the cargo pump room be located amidships, a special problem arose necessitating the design of special electric motors that could be safely used for driving the cargo pumps in a compartment where the presence of explosive gases could not be entirely eliminated. How this problem was solved is described later on in this article.

The main particulars of the *Gulfpride* are as follows:

Length overall	543 feet	11½	inches
Length between perpendiculars	525 feet	0	inches
Beam, molded	74 feet	0	inches
Depth to shelter deck	40 feet	6	inches
Tween deck height (main to shelter deck)	14 feet	8	inches
Load draft	28 feet	0	inches
Shaft horsepower	4,000		
Speed	11 knots		
Deadweight tonnage	16,700		
Capacity of main cargo tanks, about	672,000 cubic feet		
Capacity of summer tanks, about	159,000 cubic feet		

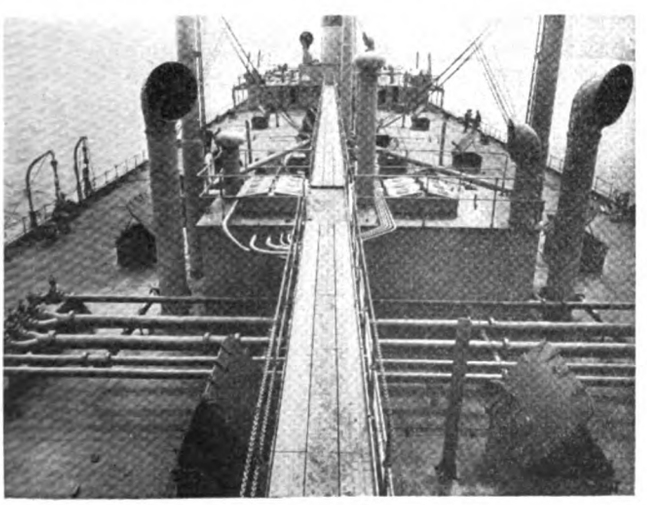
The vessel was built under special survey of the American Bureau of Shipping and Lloyd's Register of Shipping for carrying petroleum in bulk with a flash point below 150 degrees F.



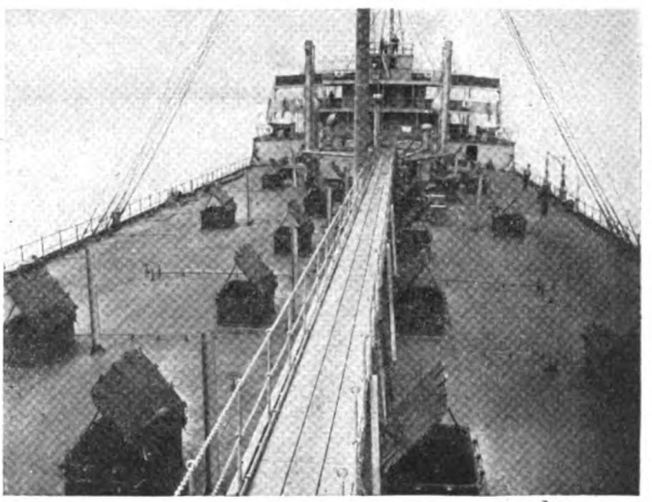
Plans of bridge, upper bridge and flying bridge decks

General Arrangement

The hull is divided by 17 watertight and oiltight transverse bulkheads into a fore peak, forward hold, 10 bulk oil

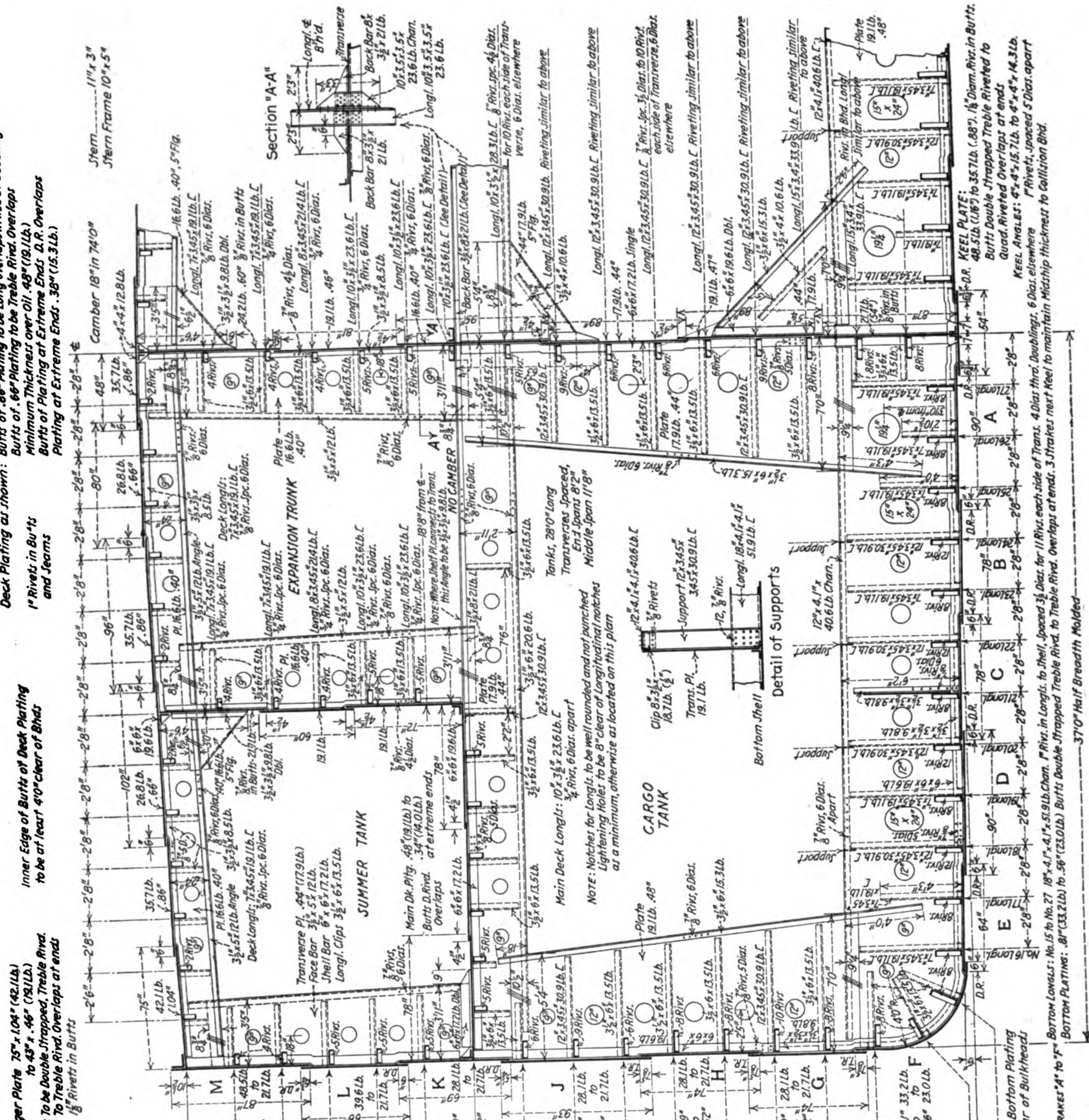


Looking aft on deck



Looking forward on deck

Generated on 2024-09-12 12:29 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



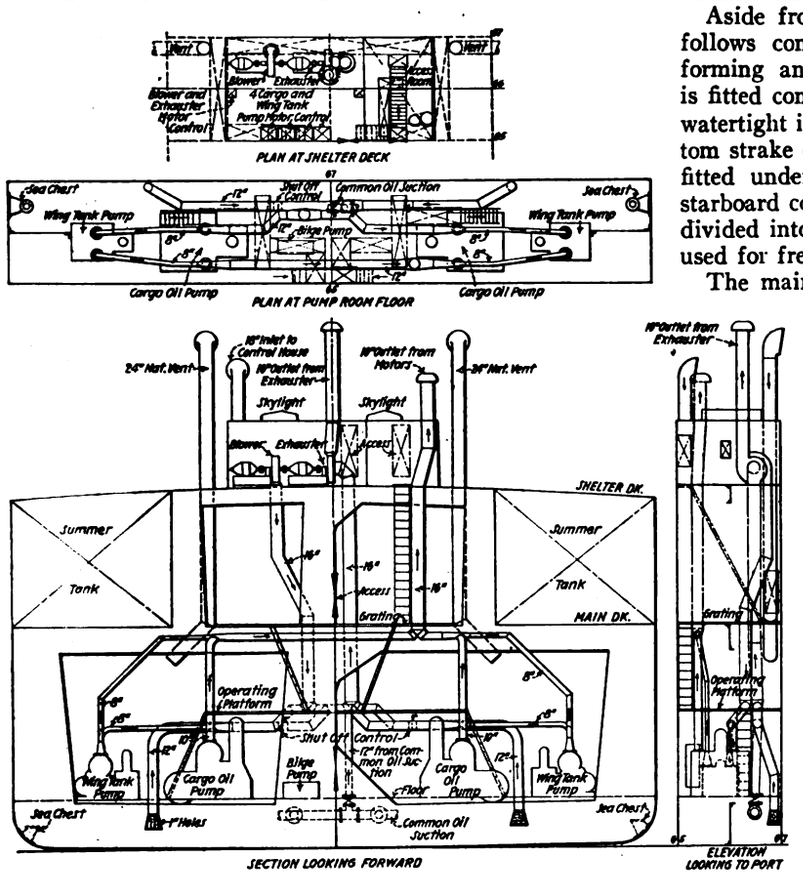
Midship section

Generated on 2024-09-12 12:32 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

tanks, pump room, fuel oil tank, machinery space and after peak. The fore hold is arranged for carrying oil in barrels by fitting a non-watertight deck between the main and shelter decks in this space. This deck extends to the stem forming store rooms over the fore peak tank.

In the cargo oil tanks a centerline bulkhead extends from the keel to the shelter deck and expansion trunk bulkheads, extending from the main to the shelter deck, are fitted on both the port and the starboard sides. The wing spaces outside the expansion trunk bulkheads are divided into 5 compartments on each side, fitted up as summer tanks. The fuel oil bunker at the forward end of the machinery space has a capacity of about 800 tons.

Forward above the shelter deck is a raised forecastle containing a carpenter shop, lamp room, paint room and store-



Arrangement of pumps and ventilation in cargo pump room

room. Just forward of amidships is a bridge with steel bulkheads at the ends. In a steel house on the bridge deck are quarters for the deck officers, quartermasters and a hospital, as shown on the plans. Above this house are accommodations for the captain, radio operators, gyro compass room and battery room while on the flying bridge is a wood pilot house containing the wheel house and chart room.

Quarters for the engineer officers, petty officers, the remainder of the crew, and the galley and messrooms are provided in a steel deck house and 'tween decks aft around the engine casing.

Steam for heating the living quarters is supplied by two donkey boilers fitted both for oil burning and for using the engine exhaust gases.

HULL CONSTRUCTION

The type of hull construction and principal scantlings are shown on the midship section reproduced on page 254. As stated previously, this is the first application of the new Isherwood bracketless system of construction in this country. In this system the brackets formerly used to connect the longitudinals to the bulkheads are omitted, compensation being provided by fitting doubling plates to the shell and deck plating in the vicinity of the bulkheads and by spacing the transverses so that they are brought closer to the bulkheads. As in the former system of longitudinal framing several thousand brackets and gusset plates would be required in a vessel of this size, the savings in cost of construction resulting from the adoption of the bracketless system are very considerable. Practically all brackets are omitted with the exception of the connection of the bottom transverses, the upper deck transverses and second deck transverses to the calking side of the centerline bulkhead and the upper deck transverses in the summer tanks to the trunk side.

Aside from this innovation the construction of the hull follows conventional practice. The keel is a flat plate forming an outside strake of the shell. A vertical keel is fitted continuous between peak bulkheads. This is non-watertight in the fore hold, in the oil tanks it forms the bottom strake of the centerline bulkhead. A double bottom is fitted under the machinery space, divided into port and starboard compartments by the center vertical keel, and also divided into two tanks fore and aft. The double bottom is used for fresh water for the donkey boiler feed.

The main, upper, shelter and bridge decks are of steel. The tops of all the houses, except the pilot house, are also of steel.

Two fresh water tanks, each with a capacity of about 20 tons, are located on the main deck on the starboard side in the machinery space.

Three steel pole masts are fitted, the foremast carrying two 5-ton steel booms on the forward side and the mizzenmast a 5-ton boom for handling machinery parts. Two steel derrick posts with cowl ventilator tops are fitted over the pump room, each derrick post carrying a 2-ton boom for handling oil hose.

Hatches, each about 6 feet by 4 feet, are fitted on the shelter deck over each main cargo oil tank, each summer tank and the fuel oil tank. Smaller hatches give access to the storerooms forward and aft while a cargo hatch, 19 feet 8 inches by 16 feet, is fitted giving access to the forward hold.

The navigation equipment includes magnetic, gyro and radio compasses. The magnetic compasses are of the Kelvin type and the radio compass of the R. C. A. type. The gyro compass is supplied by the Sperry company.

Four 24-foot metallic lifeboats are installed under mechanically operated davits and a 16-foot work boat is stowed under swinging davits on the after deck house.

DECK MACHINERY

The deck machinery includes the following:

A Hyde hydro-electric steering gear, actuated by a 20 horsepower motor and a Waterbury pump.

A Sperry electric telemotor control.

A Sperry gyro pilot automatic steerer.

A Hyde spur geared anchor windlass operated by a 75 horsepower motor.

A Hyde compound geared warping winch, driven by a 35 horsepower motor.

2 Hyde spur geared cargo winches, driven by 25 horsepower motors.

2 Hyde spur geared mooring winches, driven by 20 horsepower motors.

1 2-ton Brunswick ammonia refrigerating machine.

Generated on 2024-09-12 12:36 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Water ballast is carried in the fore and after peaks. The fore peak is filled and emptied by a separate pump in the fore hold. The after peak, engine room bilges, double bottom and after cofferdam are handled from a pump in the machinery space.

In addition to the regular fire fighting equipment required by the U. S. Steamboat Inspection Service, a Lux system is fitted for protection of the cargo oil tanks, cofferdams, fuel oil tanks, lamp room, paint room, forward hold, pump room and machinery space.

A battery of Lux cylinders is installed under the superstructure amidship. Pipe lines convey the extinguishing agent, an inert gas, from the cylinders to the nozzles in the spaces protected. All the cargo tanks are protected in such a fashion that if a fire occurs in one, the neighboring tanks are simultaneously flooded with gas to prevent its spread.

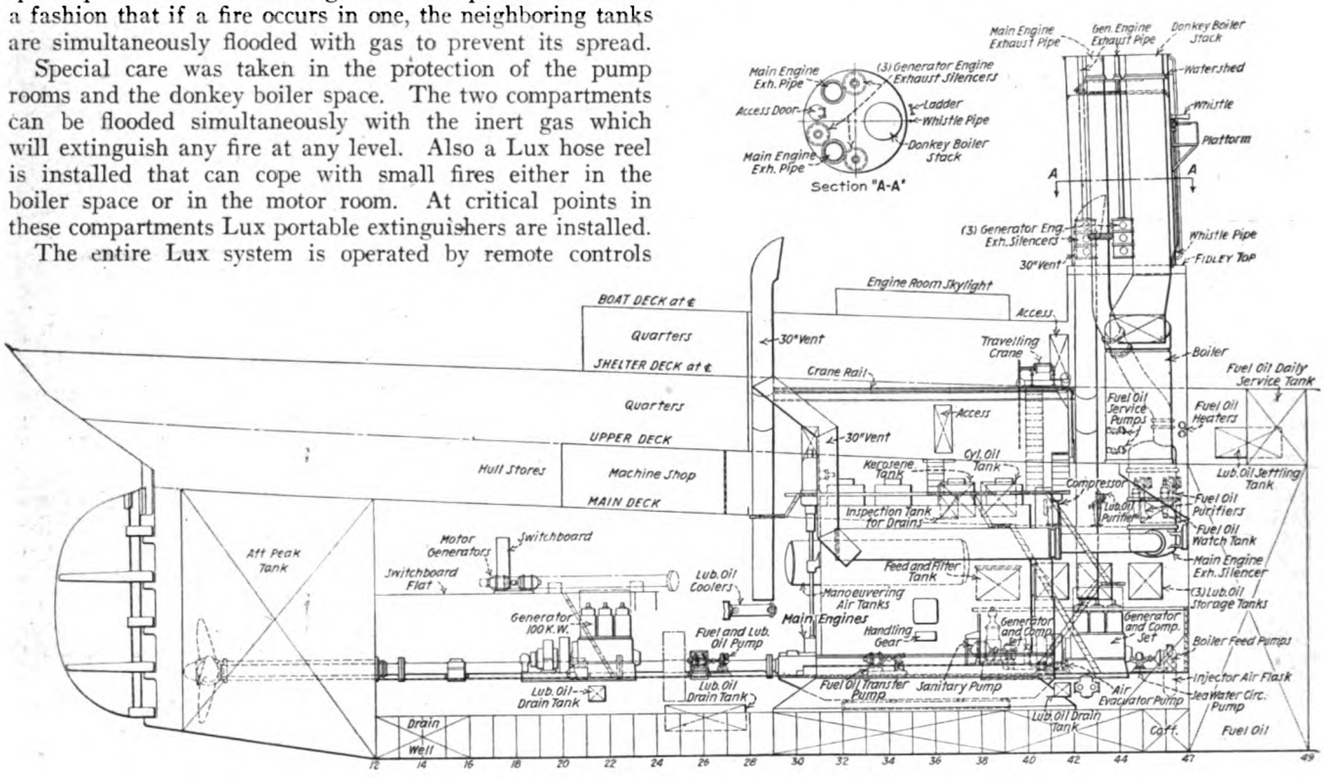
Special care was taken in the protection of the pump rooms and the donkey boiler space. The two compartments can be flooded simultaneously with the inert gas which will extinguish any fire at any level. Also a Lux hose reel is installed that can cope with small fires either in the boiler space or in the motor room. At critical points in these compartments Lux portable extinguishers are installed.

The entire Lux system is operated by remote controls located conveniently near the bridge. Fire in a cargo tank may be extinguished by simply pulling a control handle. To totally flood the engine room it is necessary to operate quick opening valves. In either case the process can be executed with extreme rapidity. No exposure to the fire is necessary on the part of the crew.

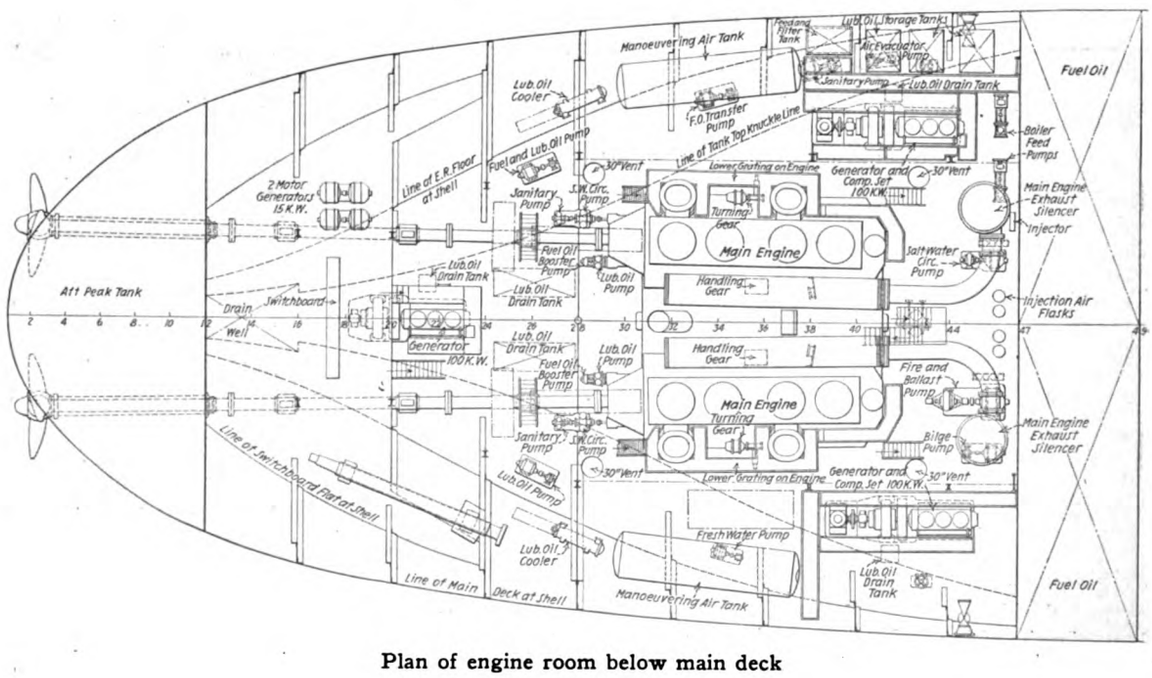
Lux protection is an accepted policy of the Gulf Refining Company due to consideration for their crews and a desire to avoid the damage and publicity attendant to tanker fires.

Motor and Pump Room Arrangement

In arranging for pumping equipment on the motorship *Gulfpride*, the Gulf Refining Company stipulated that the



Longitudinal section through engine room

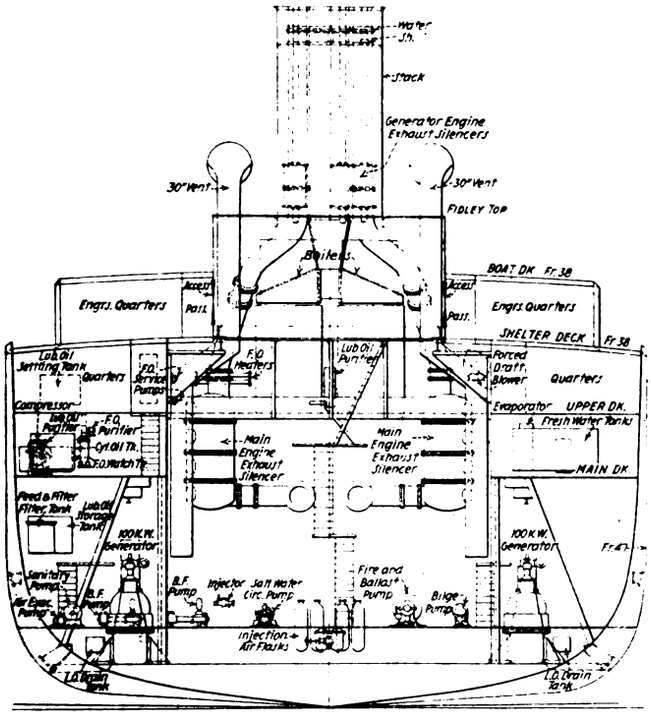


Plan of engine room below main deck

Generated on 2024-09-12 12:29 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

pump room should be located amidships. Plans were originally prepared at the yard with the pump room and motor room located in the same space, but with the motors entirely separated by partitions from the pumps, access to this room being from the deck and without any connection whatever with the pump room space. It was believed that because of the hazard of locating the pumps and motors in the same space this arrangement would be necessary.

However, this plan was rejected and it then became necessary to devise a safe method of operating the motors in the same space as the pumps. This led to an investigation of motors used in mine equipment, where the problem of operating them in a gas laden atmosphere is similar to that to be found in the pump room of the tank ship. The investigation resulted in the design of special motors by the electrical department of the Federal Shipbuilding Company in conjunction with the Westinghouse Electric and Manufacturing Company that had as a basis the United States Bureau of Mines standard types of permissible motors used in mine service. The danger of an explosion occuring in motors of the type developed is remote, but should an explosion take place inside the casing, this casing is so designed that before the burned gases can reach the gases in the pump room they will be so far cooled that an explosion cannot take place. A special form of stuffing box also provides a further safeguard against the leakage of hot gases from the motor into the pump room.



Transverse section at frame 38, looking forward

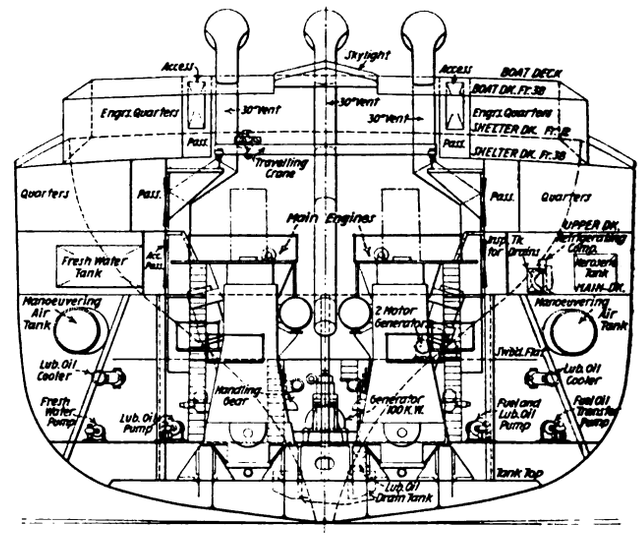
The final arrangement of the pump room is shown on page 255. It is located between hatches No. 5 and No. 6 and is divided into two compartments by the centerline bulkhead. The bulkhead is provided with openings at the lower levels for access from one compartment to the other. The control and access rooms are located at the shelter deck level directly over the pump room.

There are two gasoline cargo pumps of the horizontal duplex piston type having a bore of 12½ inches and a stroke of 12 inches, manufactured by the Worthington Pump and Machinery Corporation. These pumps are driven by 100 horsepower special Westinghouse motors and are located inboard. Each pump has a capacity of 1,500 gallons per minute at a pressure of 90 pounds per square inch at the discharge.

The wing tank pumps, of which there are two, are also of the horizontal duplex piston type of Worthington make, having cylinder diameters of 8½ inches and a stroke of 12 inches. These pumps are driven by 40 horsepower Westinghouse motors and have a capacity of 500 gallons per minute each against a head of 90 pounds per square inch. The wing tank pumps are located outboard. The motors, which are of special construction, as noted above, are of the watertight, Westinghouse marine type compound wound, operating on 230 volts direct current. Casings are provided with connections for air inlets and outlets.

Pump Room Ventilation

In addition to the use of special motors, the ventilating system for the pump room offers an additional safeguard against the explosion hazard. This ventilation is supplied by two American Blower Company sirocco type motor driven fans located in the control room. One of these fans serves as an exhauster for pump room service while the other acts as a blower supplying ventilation for the pump motors. Each fan has a capacity of approximately 3,000 cubic feet of air per minute at a static pressure of about 6 inches of water. The fans are driven by 7½ horsepower Westinghouse adjustable speed, drip proof, marine type motors, operating on 230 volt direct current. The controls, of the hand operated starting panel type enclosed in a drip proof case, were supplied by the Cutler Hammer Manufacturing Company. Each fan control is interlocked with the pump motor controls so that complete ventilation of the pump motor casings is insured at a safe interval before the pumps are started



Transverse section at frame 38, looking aft

The exhaust fan is arranged to withdraw vapors from the pump room and the holds through the main cargo oil suction pipe. This exhauster has a separate suction with branches to the lower pump room, to both the port and starboard compartments and to the main cargo oil suction pipe. It is also supplied with dampers at the exhauster and a valve at the suction pipe. This fan discharges to the atmosphere above the control room through a ventilator fitted with a damper. In case of an emergency the exhauster is also arranged so that it will act as a standby for motor ventilation.

The blower for ventilating the pump motors draws air

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

from the control room and discharges to a header having branches to all four pump motors. A damper is fitted at the blower discharge. The outlets from the motors are connected to a header discharging to the atmosphere above the control room. All ventilating pipes for the pump motors are of heavy construction and were subjected to a test pressure of 40 pounds per square inch when the installation was completed.

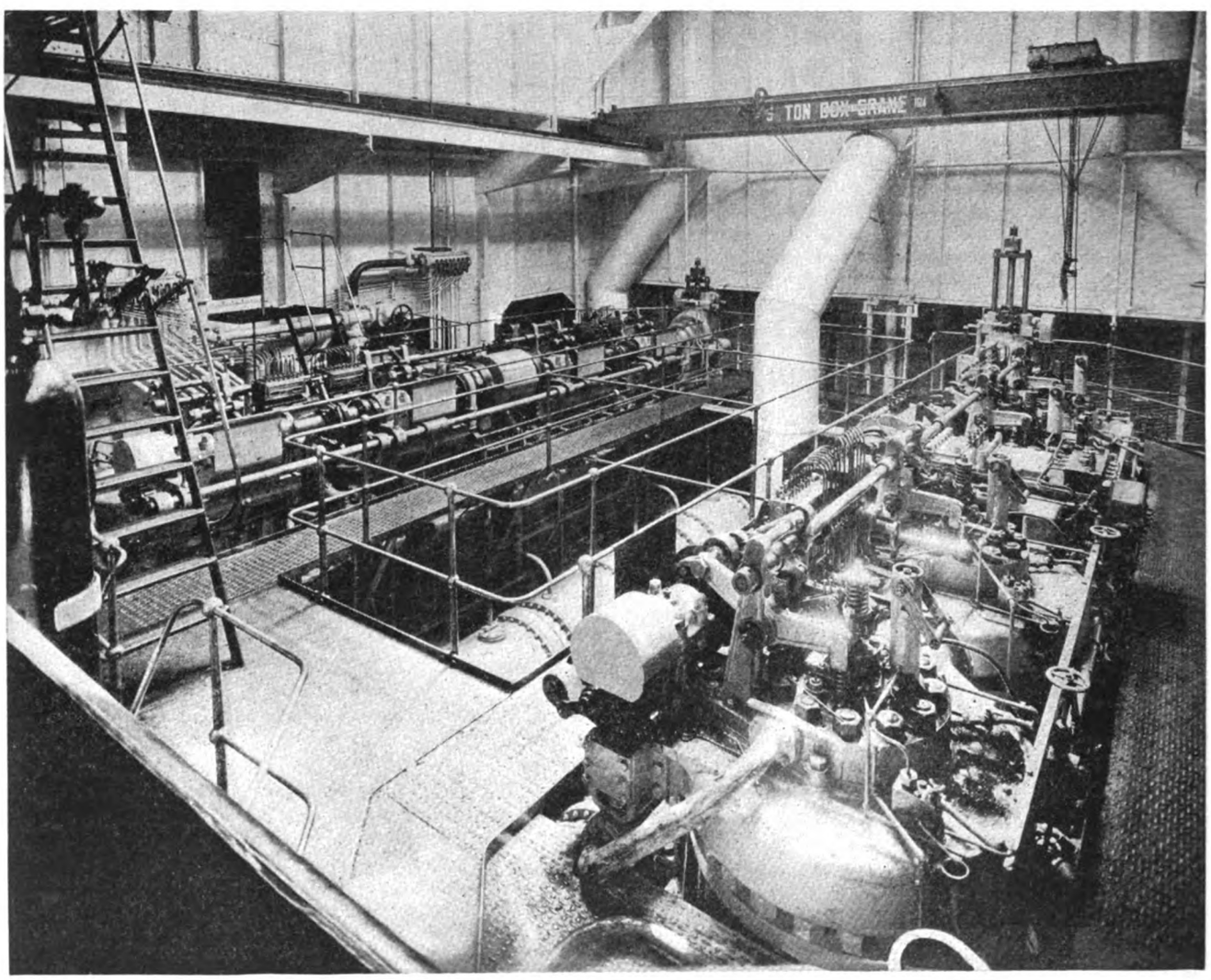
Propelling Machinery

As previously stated propulsion of the vessel is by two Bethlehem two cycle, single acting, air injection, direct reversible, crosshead type Diesel engines. Each engine has 4 cylinders and develops 2,000 brake horsepower at 115 revolutions per minute, with a mean effective pressure of 67.5 pounds per square inch and a piston speed of 920 feet per minute. The cylinders are 26 inches diameter by 48 inches stroke. Each engine drives a 3-bladed, built-up, manganese bronze propeller 13 feet 10¾ inches diameter by 11 feet 2¼ inches pitch with a developed area of 51.5 square feet. The line shafting is 16 inches diameter and the tail shafts 16 inches diameter.

The engines are arranged for sea water cooling, on the closed system, throughout, the pistons being cooled through telescopic pipes through the crosshead and piston rod. Each engine has attached one 3-stage injection air compressor, 2 double acting scavenging air pumps with cylinders 26 inches diameter, one double acting reciprocating cooling water pump, one rotary lubricating oil pump, one rotary fuel oil boosting pump, one double acting reciprocating sanitary pump, a Kingsbury thrust shaft and an electric turning gear. The water pumps are located on the outboard side of the engines at the aft end of the bedplate and are driven by gears from the aft end of the crank shafts. The oil pumps are located on the inboard side and are driven by gears from the after end of the crank shafts.

Each engine is supplied with an independent forced feed lubricating oil system. Silencers are fitted to the engine exhausts.

This type of engine was very fully illustrated and described in the March, 1924, issue of Marine Engineering and Shipping Age, pages 161 to 167. The machinery arrangement of the *Gulfpride* is shown on the drawings reproduced in these pages.



General view of engine room at upper grating, looking aft

Two maneuvering air tanks, built at the Federal yard, are provided in the engine room. These are 5 feet diameter and 21 feet 6 inches long, designed for a working pressure of 350 pounds per square inch. These tanks are supplied with air by the maneuvering air compressor and also by excess air from the injection system. Their capacity is sufficient for 12 starts of each engine without replenishing.

Steam for heating purposes, for use in the galley and

Generated on 2024-09-12 14:05 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

for driving the emergency compressor and the boiler feed pumps is supplied at 150 pounds per square inch by two vertical firetube donkey boilers, each 7 feet 4 inches diameter by 13 feet high and having 1,200 square feet of heating surface, located at the forward end of the engine room. These boilers are arranged to utilize the heat from the exhaust gases of the main engines but they are also fitted with Peabody oil burners and a complete fuel oil heating and transfer system for use when desired. The boilers are also equipped with an American forced draft blower.

ELECTRICAL PLANT

As practically all of the deck and engine room auxiliary machinery is driven by electrical motors the electrical plant consists of three main generating sets, each consisting of a 100-kilowatt, 240-volt direct current Westinghouse generator direct connected to a 150 brake horsepower Nelseco, three cylinder, solid injection Diesel engine designed to operate at 260 revolutions per minute. The engine exhausts are fitted with silencers. Two of the generator units are connected through Cutler-Hammer magnetic clutches to three-stage New London maneuvering compressors.

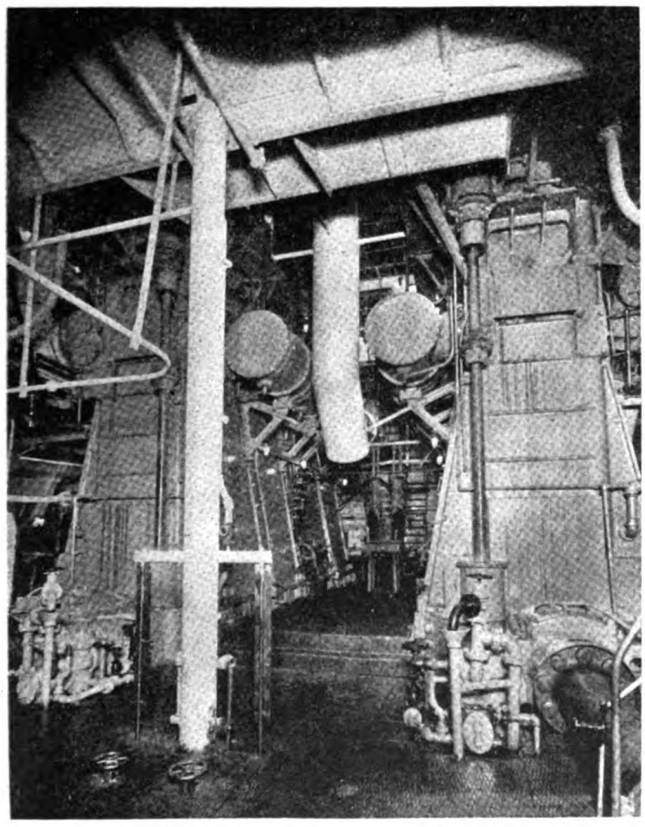
There are also two 15-kilowatt, Westinghouse motor generator sets (one a standby) for supplying current at 115 volts for the ship's lighting.

The electrical installation also includes a Trumbull switchboard, a Sperry searchlight, a Radio Corporation radio outfit and radio battery, Cory engine room and docking telegraphs and a Sperry helm angle indicator.

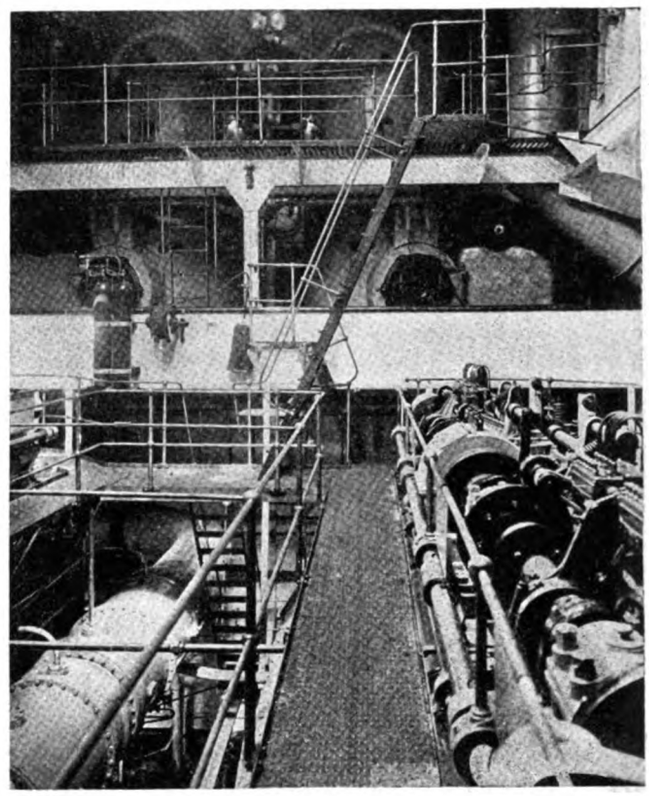
AUXILIARIES

The engine room auxiliaries include the following:

2 Andale lubricating oil coolers, each with a capacity of 125 gallons per minute, one for each main engine.
2 Andale lubricating oil strainers, each with a capacity of 125 gallons per minute, one for each main engine.
1 Sharples centrifugal lubricating oil purifier.



General view in engine room, looking forward



Looking forward from upper grating in engine room

1 Andale duplex salt water strainer, for the main engine.
1 Andale duplex fuel oil strainer for the main engines.
2 Sharples centrifugal fuel oil purifiers.
1 Andale duplex salt water strainer for the auxiliary engines.
1 Worthington 2-stage steam driven emergency air compressor.
2 Worthington horizontal duplex, steam driven fuel oil service pumps, 3½ by 2¼ by 4 inches.
1 Cameron centrifugal salt water circulating pump (standby), 15 horsepower motor.
1 Cameron centrifugal sanitary pump, 10 horsepower motor.
1 Cameron 2-stage centrifugal fire and ballast pump, 60 horsepower motor.
1 Northern rotary lubricating oil pump (standby) 7½ horsepower motor.
1 Northern rotary fresh water pump, 2 horsepower motor.
2 Northern rotary bilge pumps, 7½ horsepower motor,
1 Northern rotary fuel oil transfer pump, 7½ horsepower motor.
1 Metropolitan double tube injector.
2 Worthington horizontal duplex steam driven donkey boiler feed pumps, 7½ by 4½ by 10 inches.
1 Nash rotary air evacuator pump, 2 horsepower motor.
1 Northern rotary fuel oil and lubricating oil pump (standby), 7½ horsepower motor.
1 Worthington horizontal duplex steam driven pump room bilge pump, 6 by 5¾ by 6 inches.
1 Davis distilling set, capacity 1,500 gallons per day.
1 Tyfon air whistle.
2 Foster lubricating oil whistle alarms.
2 Foster lubricating oil emergency stop governors.

The engineer's work shop is equipped with a 24-inch by 10-foot Monarch lathe, driven by a 5 horsepower motor; a 20-inch Barnes drill press, driven by a 1 horsepower motor; a 16-inch Rockford shaper, driven by a 2 horsepower motor, and a Hisey-Wolf grinder, driven by a 2 horsepower motor.

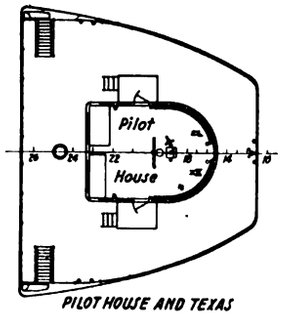
H. C. CANTELOW, vice president of the Luckenbach Steamship Company and active head of that organization on the Pacific coast, has resigned. He will be succeeded by M. J. Wright who for the last year has been Pacific coast manager for the company. Z. T. George, formerly traffic manager has been promoted to fill the vacancy created by the promotion of Mr. Wright.

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

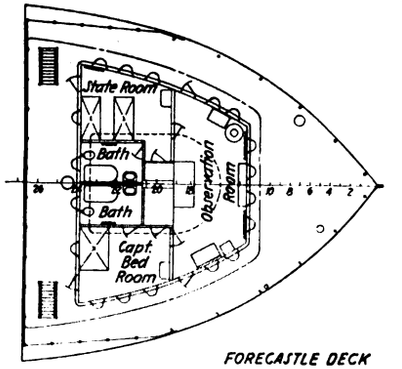
Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Principal Dimensions

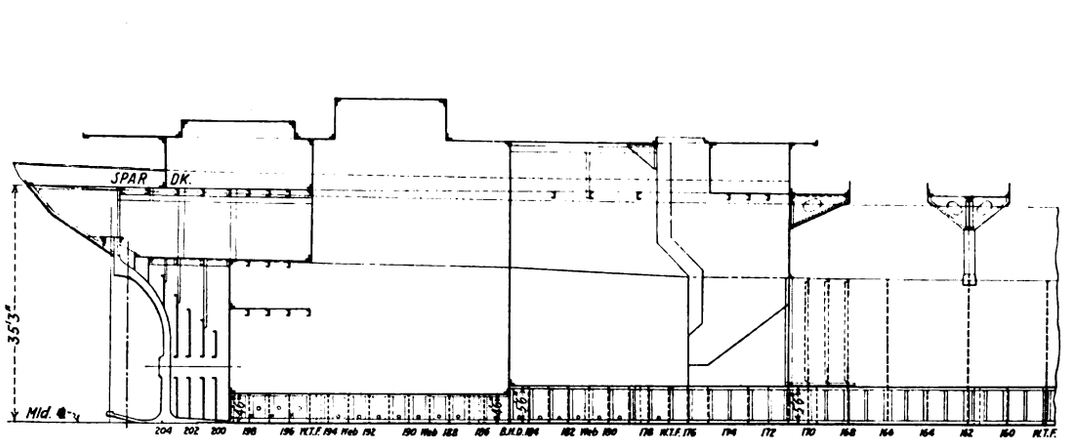
Length overall	604 feet
Length between perpendiculars	580 feet
Beam, molded	60 feet
Depth, molded	32 feet
Gross tonnage, about	7,800 tons
Net tonnage, about	6,300 tons
Cargo capacity, on 20-foot draft	12,000 tons
Speed, statute miles per hour	11½

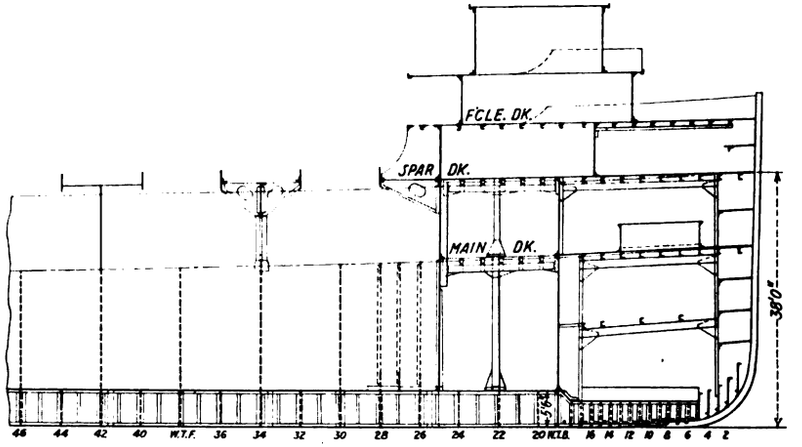


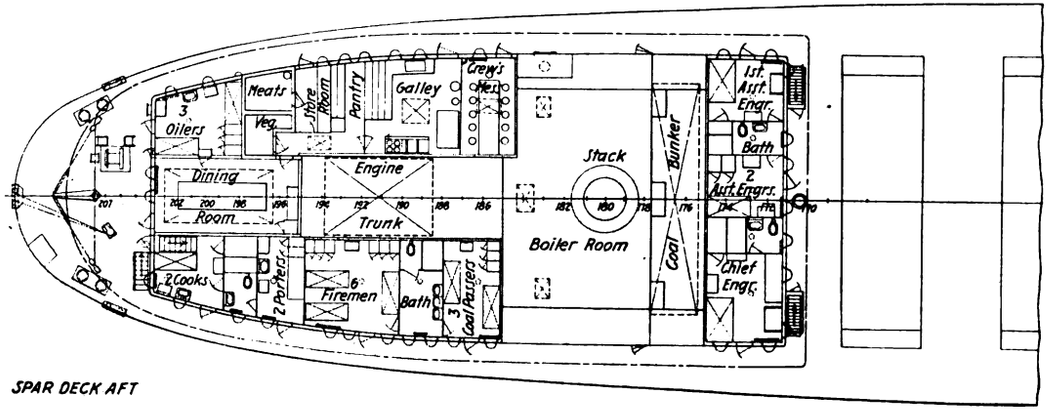
PILOT HOUSE AND TEXAS



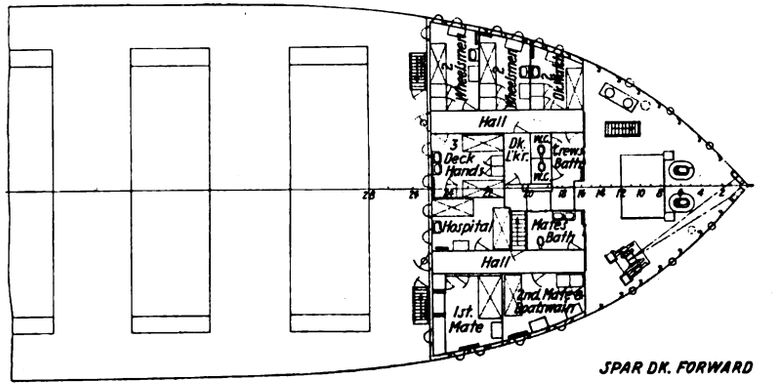
FORECASTLE DECK







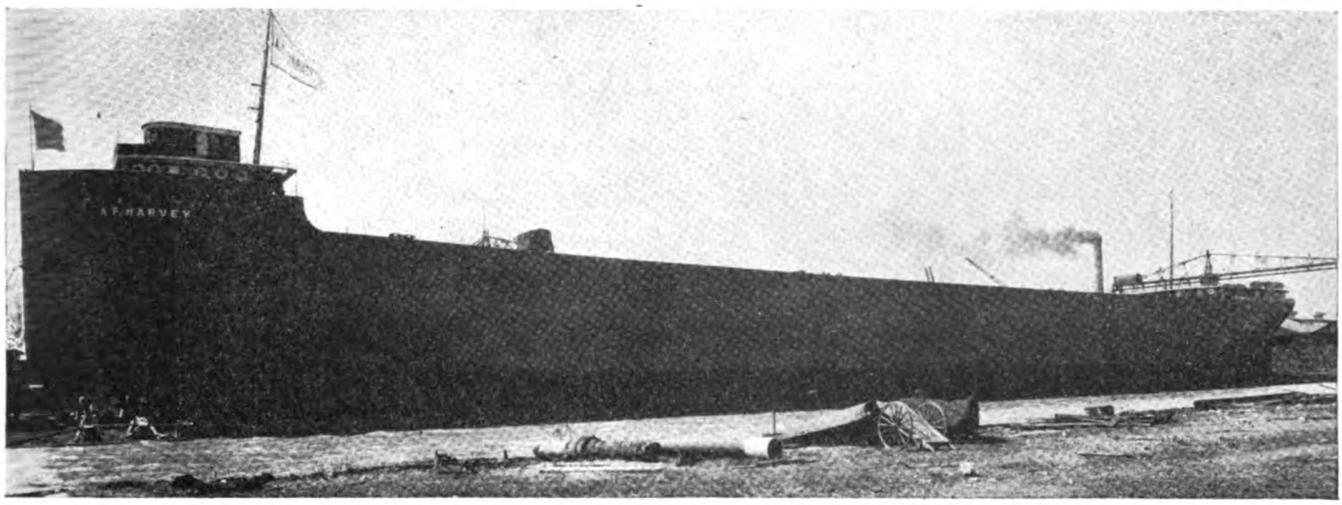
SPAR DECK AFT



SPAR DK. FORWARD

Partial inboard profile and deck plans of Pittsburgh Steamship Company's bulk freighter A. F. Harvey

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Pittsburgh Steamship Company's 600-foot bulk freighter A. F. Harvey ready for launching

Pittsburgh Freighter Launched at River Rouge Yard

First of two new 600-foot bulk freighters named for A. F. Harvey, president of the Pittsburgh Steamship Company

THE bulk freight steamer *A. F. Harvey,* which is under construction at the yards of the Great Lakes Engineering Works, River Rouge, Mich., for the Pittsburgh Steamship Company, Cleveland, O., was launched on April 9 and christened by Miss Sarah Harvey, daughter of the president of the Pittsburgh company for whom the vessel was named. The vessel will be delivered about May 20.

The new vessel is practically a duplicate of the *Richard V. Lindabury* and *Joshua A. Hatfield,* the last two big freighters added to the Pittsburgh fleet in 1923. A sister ship of the *Harvey,* the *B. F. Affick,* is being built at the yards of the Toledo Shipbuilding Company, Toledo, O., and will be launched soon.

The principal dimensions of the *A. F. Harvey* are as follows:

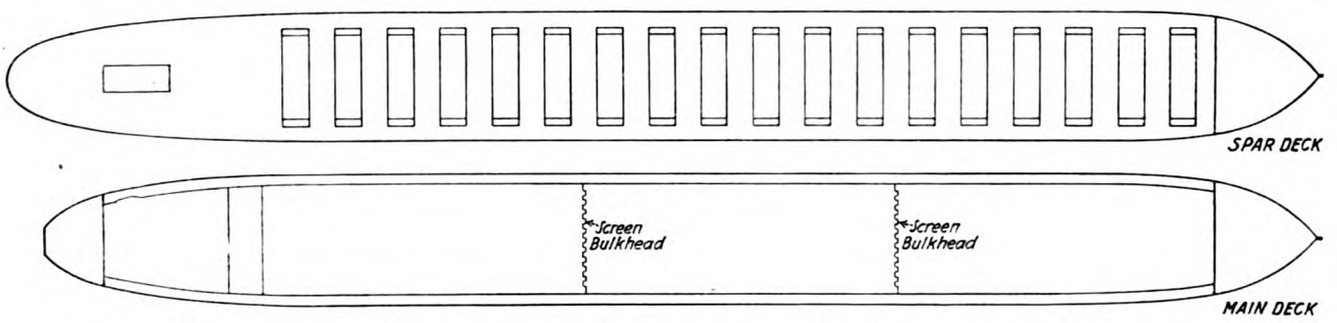
Length overall	604 feet
Length between perpendiculars	580 feet
Beam, molded	32 feet
Gross tonnage, about	7,800 tons
Net tonnage, about	6,300 tons
Cargo capacity, on 20-foot draft	12,000 tons
Speed, normal, statute miles per hour	11½

Hull Construction

The vessel has 18 hatches, each 38 feet wide by 12 feet fore-and-aft, fitted with sliding plate covers of the Great Lakes Engineering Works type. The hull is divided into three compartments by two screen bulkheads. The total water ballast capacity is about 8,700 short tons, and it is carried in the double bottom and side tanks. The side tanks are sloped so that the width of the tank top is just equal to the opening of the hatches in the spar deck, which enables the clams to clean out the ore cargo with practically no shoveling.

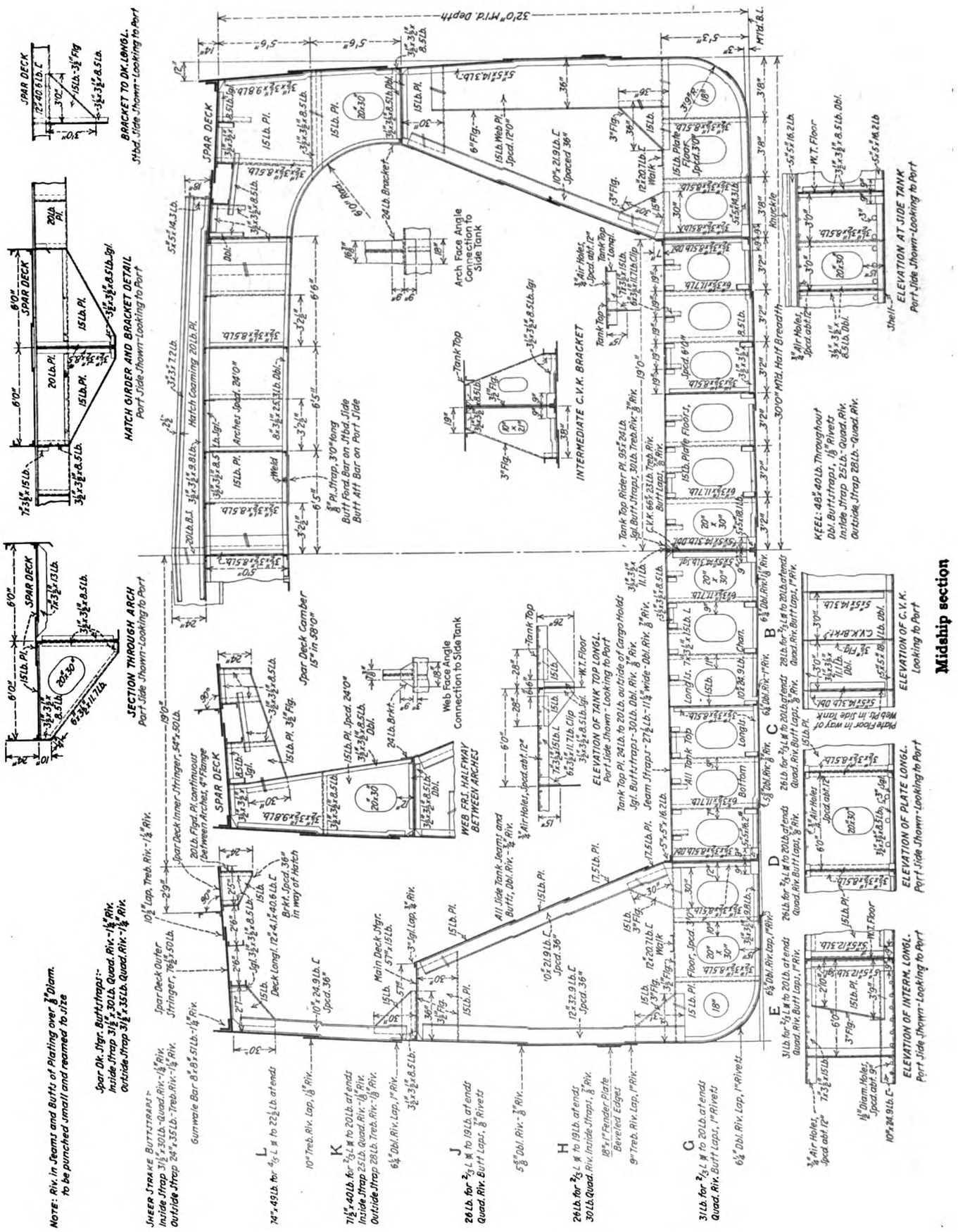
The use of steel for cabin partitions is being carried farther in this boat than in previous practice. Except in the rooms of the higher officers, only the exposed walls will be ceiled with wood, the other partitions being of steel. Where wood partitions are used, they are carried on a steel coaming. Around the outside of the cabin, the baseboard is omitted in all rooms, except the owner's, captain's and chief engineer's, so that all corners which tend to accumulate moisture and rust are open for inspection and painting, which will do away with most of the troubles from corrosion which exist on the older boats.

The vessel will be fitted with a gyro compass and the equipment throughout, both in the cabins and for navigating purposes, will be in accordance with the Pittsburgh Steamship Company's standard, which aims to provide everything necessary for the efficient handling of the vessel and the comfort of the officers and crew, without adding any unnecessary complication, which in many cases actu-

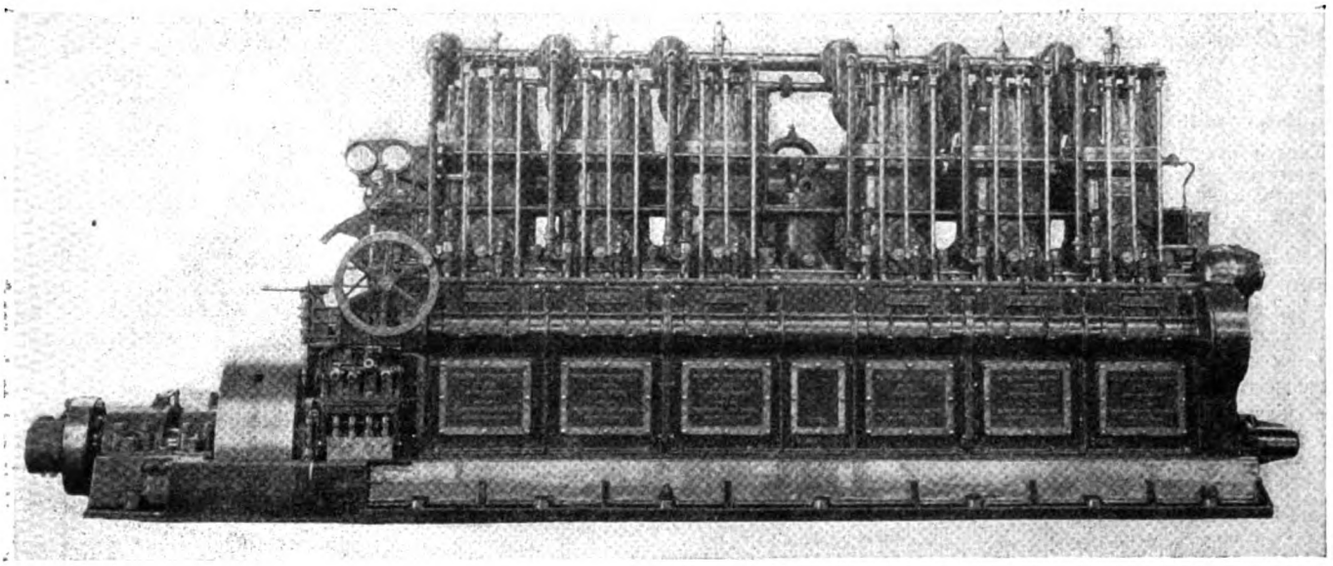


Outline of spar and main decks, showing arrangement of cargo hatches and bulkheads

Generated on 2024-09-12 12:34 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN


Midship section
32'0" Mld. Depth
SPAR DECK
HATCH GIRDER AND BRACKET DETAIL
Port Side Shown-Looking to Port
SECTION THROUGH ARCH
Port Side Shown-Looking to Port
BRACKET TO DK. LONGL.
Stbd. Side Shown-Looking to Port
Spar Deck Camber 15" in 58'0"
WEB FRS. HALFWAY BETWEEN ARCHES
Web Face Angle Connection to Side Tank
Arch Face Angle Connection to Side Tank
INTERMEDIATE C.V.K. BRACKET
ELEVATION AT SIDE TANK
Port Side Shown-Looking to Port
ELEVATION OF TANK TOP LONGL.
Port Side Shown-Looking to Port
ELEVATION OF C.V.K.
Looking to Port
ELEVATION OF PLATE LONGL.
Port Side Shown-Looking to Port
ELEVATION OF INTERM. LONGL.
Port Side Shown-Looking to Port
KEEL: 48'5 40Lb. Throughout
Dbl. Buttstraps, 1⅛ Rivets
Inside Jtrap 25Lb.-Quad. Riv.
Outside Jtrap 28Lb.-Quad. Riv.
NOTE: Riv. in Seams and Butts of Plating over ⅞" Diam. to be punched small and reamed to size
SHEER STRAKE BUTTSTRAPS:-
Inside Jtrap 31½"x.30Lb. Quad. Riv.-1⅛" Riv.
Outside Jtrap 24"x.35Lb.-Treb. Riv.-1⅛" Riv.
Spar Dk. Jtgr. Buttstraps:-
Inside Jtrap 31½"x.30Lb. Quad. Riv.-1⅛" Riv.
Outside Jtrap 31½"x.35Lb. Quad. Riv.-1⅛" Riv.
Midship section

Generated on 2024-09-12 12:29 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



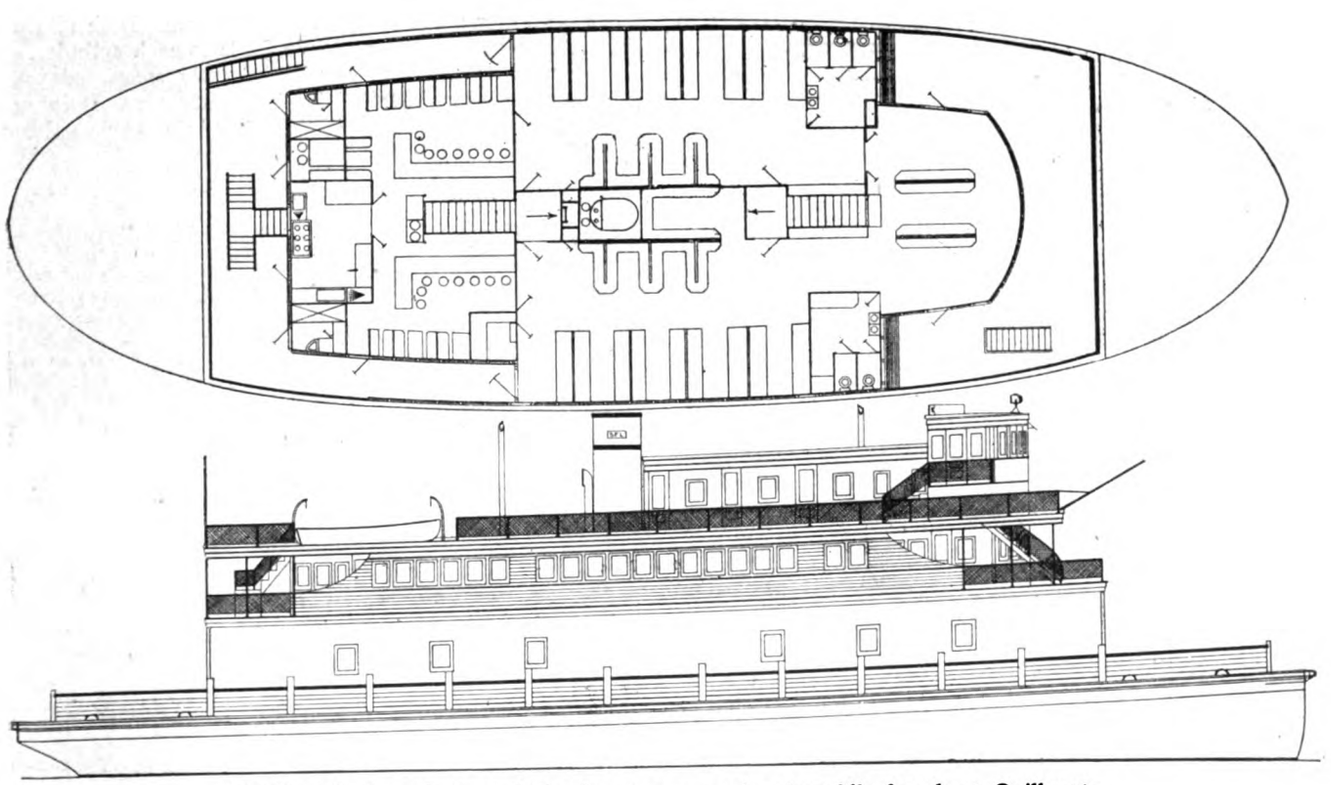
Washington Estep Diesel engine for ferryboat Quillayute

Puget Sound Ferryboat Quillayute

Largest vessel for Puget Sound service ordered in 1926 equipped with Washington-Estep Diesel Engines

THE largest vessel ordered during 1926 for service on Puget Sound, Wash., was the new ferryboat *Quillayute* which is now under construction for the Sound Ferry Lines, Inc., of Edmonds, Wash. The vessel is being built by the Winslow Marine Railway and Shipbuilding Company, Winslow, Wash., after plans drawn up by M. MacNaught, naval architect, Seattle, Wash. The duties incidental to the building of the ferryboat, including the investigation of various Diesel engines, the approval of specifications and plans for the hull and the general supervision of the work, have been in charge of Captain J. H. Payne, president, and Captain O. Joyce, manager of the Sound Ferry Lines, Inc.

The boat is to be a single-ended combination automobile



Profile and plan of upper deck of passenger and automobile ferryboat Quillayute

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

and passenger ferry of wood construction, capable of carrying 65 automobiles and 500 passengers. It will be driven by twin Washington-Estep Diesel engines and is designed for a speed of approximately 12½ knots. The principal dimensions of the hull are:

Length overall	160 feet
Beam overall, between guards	52 feet
Depth, molded	9 feet 6 inches
Draft	13 feet 9 inches

The vessel, as soon as completed, is to be placed on the run between Edmonds and Port Ludlow, Wash., a distance of about 17 miles, and the ferry will maintain a schedule of one hour and ten minutes between the two cities. The ferry was designed especially for this run and will be over twice the size of any vessel previously operated in this service. Among the accommodations for passengers will be a large observation room and a dining salon with a seating capacity for 50 passengers.

Propelling Equipment

As noted, power for the new ferry will be provided by two Washington-Estep Diesel engines built by the Washington Iron Works, Seattle, Wash. These engines are 4 cycle, solid injection, multi-cylinder, vertical type full Diesel engines. Each engine is a 6-cylinder direct reversing machine, 13½-inch bore by 18-inch stroke, conservatively rated to develop 375 brake horsepower at 250 revolutions per minute.

The engines are the standard Washington-Estep Diesel engine design, with heavy open sided main "L" frames fitted with removable columns on the working side, through-bolted to the bed plate. These removable columns on the working side give unobstructed access to all main bearings and permit the removal of the crank shaft from the side of the engine without dismantling the cylinder heads, valve gear or other working parts. The entire frame is enclosed with large quick removable plates fitted with inspection doors. The plates on the back side of the frame are sufficiently large to permit the removal of pistons through the side of the engine without disturbing the upper portion of the machine.

Each cylinder consists of a large water jacket into which a removable cylinder liner has been fitted. The water jackets are fitted with clean-out doors and are through-bolted to the bed plate, thus relieving the engine frame of any tensile stresses.

Starting air is admitted through the main intake valve making unnecessary the customary cored opening through the water jacket for the starting valve. This leaves an extra large space for cooling water and gives a simple, symmetrical casting free from expansion cracks.

As mentioned above, the engines operates on a direct (or mechanical) fuel injection system, at approximately 3,800 pounds hydraulic pressure for atomizing the fuel oil. The fuel pumps are positively spur-gear driven at a reduced speed from the crank shaft. These pumps are unit construction with integral forged steel bodies. They are of the inverted type so designed as to be self-priming and eliminate air pockets. A priming hand pump, similar to the power pump, is part of the unit construction. Fuel pumps furnish a surplus of fuel at the required pressure for injection to the common manifold or rail with individual branch stop valves, feeding to the mechanically operated fuel spray valves in the center of each cylinder head. Surplus fuel by-passes through an automatic regulating valve. The fuel spray valves are of the over-balanced type and have a special mechanical strainer on the stem in each fuel nozzle to prevent clogging of the spray holes in the removable spray tip. The entire spray valve is of unit construction and can easily be removed from the cylinder head for examination or cleaning.

The starting and maneuvering of these engines is accomplished in a reliable manner by the use of a small volume of compressed air at moderate pressure. The starting operation is controlled by one lever, admitting starting air to each cylinder in turn through the main intake valve which, as heretofore stated, eliminates the extra starting valve in the cylinder head. The starting air is automatically cut off from the cylinders as soon as the engine starts to fire on the fuel oil.

Maneuvering

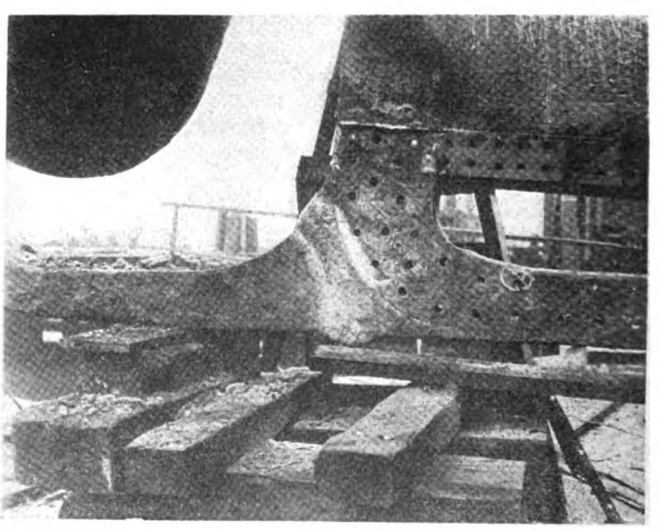
The engines can be started either ahead or astern in about three seconds. With the effective method of governor control of fuel feed at all speeds, this maneuvering can be done at the most desirable speed for the results required. This means that when the vessel is in a close place this maneuvering can be done at extremely slow speed without causing danger to the vessel or landings and with the use of a small volume of air.

The governor control handle (or throttle) is adjusted for the number of revolutions desired, while the maneuvering from ahead to astern is accomplished by a single hand wheel which slides the cam shaft longitudinally to bring the proper cams under their respective rollers, thus changing the timing to the right sequence. A slight pull on the air throttle starts the engine in motion. The direct (or solid) injection system of fuel feed permits of flexible maneuvering at slow speeds without danger of misfiring. The compressed air is replenished by a single acting compressor attached to the main engine and an auxiliary compressor is furnished for standby use.

Lubricating System

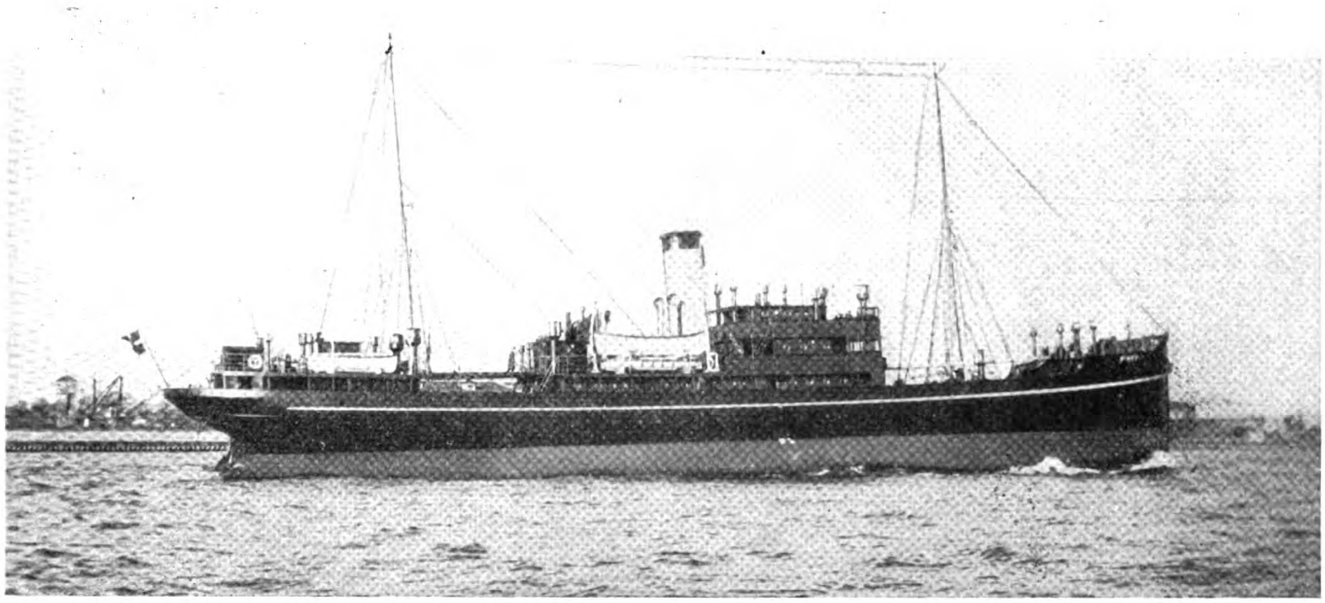
All main bearings, crank bearings and piston pins are lubricated by means of a force feed system through the crank shaft and connecting rods. Return oil from the screen in the base is taken to an auxiliary filtering and cooling tank from which it is pumped through the bearings under pressure. Additional cooling of the oil is obtained by piping the oil before it reaches the bearings through the cold water header at the bottom of the engine cylinders. A mechanical oiler of the Manzel type furnishes fresh oil for cylinder lubrication with multiple feeds to each cylinder.

Shop tests on the engines were recently completed and they are now being installed in the *Quillayute*. It is expected that the ferryboat will be placed in service about May 15.



Stern shoe of S. S. West Keene welded with Thermit through section 8½ by 20 inches

Generated on 2024-09-12 12:31 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



M. S. Disko on her trial trip

Motorship Disko Built for Arctic Service

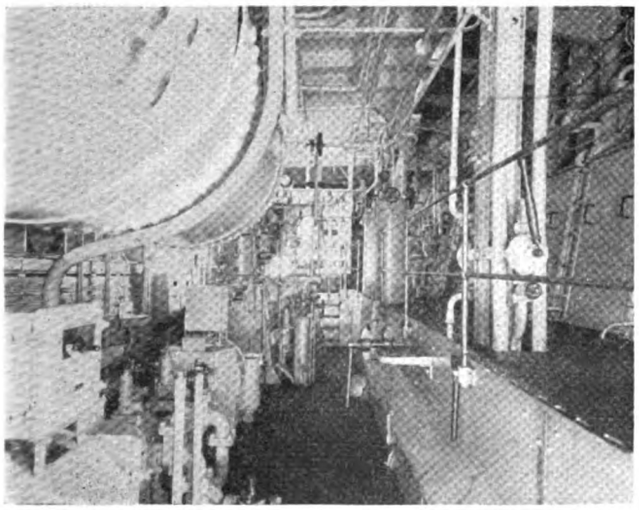
First combined passenger and cargo Diesel engined ship for trading between Copenhagen and Greenland

GREENLAND is under the sovereignty of Denmark and since 1774 trade between Greenland and Denmark has been solely in the hands of the state of Denmark.

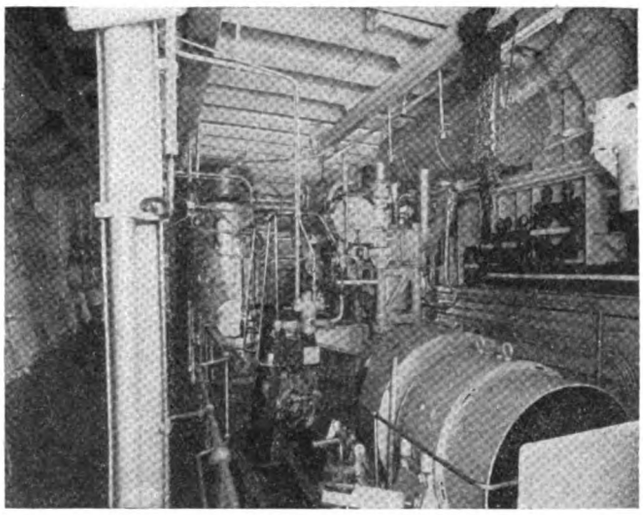
Until 1888 sailing ships were solely used in the Greenland trade. At that time a voyage generally occupied 50 days, and even under the best conditions a voyage from Greenland to Denmark could not be completed under 20 days. In 1888 steam was introduced as an auxiliary power, and used in connection with sails. In 1905 the last sailing ship proper was taken out of service, and replaced by a steamer. The auxiliary ship was able to make the trip in 12 to 15 days, according to weather conditions. In view of the difficulties with ice the ships employed in the service were all built of wood, as it was found that wooden ships were better fitted to resist the crushing effect of the ice. However, from experience gained in other icebound waters, it has been proved that modern steel ships are superior for this service and therefore a noteworthy departure has been made from the old practice by building the motorship *Disko* for operation on this route.

Advantages of Diesel Power for Arctic Service

When the Royal Danish Greenland Trading Company ordered the latest addition to its fleet, Diesel engines were adopted because the time occupied on the voyages can be reduced to 9 to 10 days, and the cargo capacity increased by 25 to 30 percent, also a greater number of passengers will be accommodated. With this design the vessel also has the advantage of being able to carry fuel and lubricating

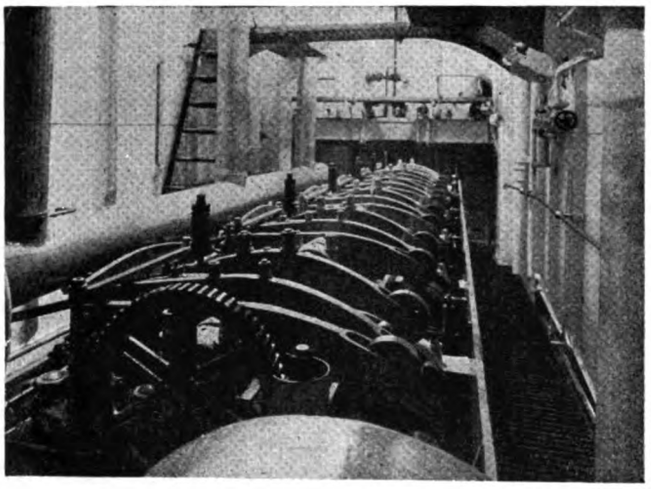


View in engine room, showing 33-kilowatt generator set



View in engine room, showing 66-kilowatt generator set

Generated on 2024-09-12 14:02 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



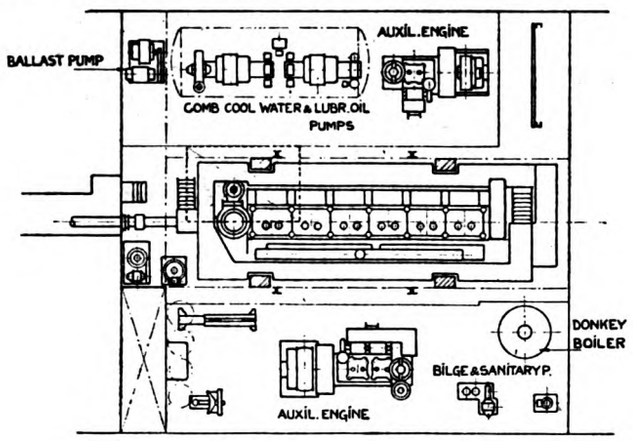
View showing valve gear of main engine

oil in her double bottom. When storage tanks on the West Coast of Greenland are completed she will be able to carry about 50 tons of petroleum as cargo in one of the tanks, which can be pumped ashore. The petroleum previously had to be transported in barrels.

While a steamer of similar size will consume 14 tons of coal, the motorship will consume only 4 tons of oil.

Main Particulars of New Vessel

With her 1,400 tons the *Disko* is the largest ship in the fleet of the Royal Greenland Trading Company. The hull was built by the Copenhagen Floating Dock Company, to



Plan of engine room

the highest class of the Bureau Veritas. The main particulars are as follows:

Length between perpendiculars	220 feet
Beam molded	36 feet
Depth to the awning deck	24 feet
Draft loaded	16 feet
Indicated horsepower	1,050
Speed, knots	10½
Deadweight capacity, tons	1,400

The *Disko* is rigged with two masts with 5 derricks serving 3 hatches. One of the derricks has a lifting capacity of 15 tons. The remaining derricks are of 3 tons capacity served by four 3-ton electric winches. The after winch is fitted with an extended shaft for warping purposes, and the windlass is electrically driven. A donkey boiler is installed for heating purposes. The galley is oil-fired.

Propelling Machinery

The propelling machinery, which is located amidships, consists of a six cylinder, single acting, four stroke reversible Diesel engine, built by Burmeister & Wain, Ltd., of Copenhagen, of their standard type, designed to develop 1,050 indicated horsepower at about 120 revolutions per minute. The arrangement of the main motor and of the engine room auxiliaries is shown on the drawing.

The stroke of the piston is made extra long in relation to the cylinder in order to reduce the revolutions, so that the engine can be employed on a single screw ship and permit the use of a propeller of large diameter.

The auxiliaries include two Diesel engines of Burmeister & Wain's enclosed and forced lubricated Diesel generator type, one single cylinder and one double cylinder, capable of developing 50 and 100 shaft horsepower at 400 revolutions per minute respectively. Each auxiliary engine is provided with a direct driven compressor, with Burmeister & Wain patented adjustable clearance space enabling the compressor at reduced capacity to supply the necessary injection air for the Diesel dynamo engine itself, while, with the compressors working at full capacity, the two auxiliary engine compressors may act as a stand-by for the main engine compressor. During maneuvering the auxiliary engine compressors act as maneuvering compressors.

Each Diesel engine is provided with a direct current dynamo with outputs of 33 and 66 kilowatts respectively at a voltage of 110 volts, and fitted on a common bedplate with the Diesel engines.

On the official trial trip which was run over the measured mile in the Sound at Copenhagen a speed of 10.59 knots was attained, with the main engine developing 1,115 indicated horsepower at 125.2 revolutions per minute.

During the 4-hour consumption trial, the main engine developed 1,096 indicated horsepower at 124.4 revolutions per minute, on a fuel consumption of 137.9 grammes per indicated horsepower hour. This figure includes the consumption of the auxiliary engines.

The *Disko* left on her maiden voyage for Greenland on April 2.

Small Size Geared Turbines

THE Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has recently placed on the market geared turbine units in ratings from 75 to 500 kilowatts. These turbines, although primarily intended for driving either AC or DC generators, may be used to drive practically any apparatus operating at speeds within the range for which the gears are suited. The principal application, it is stated, is for steam driven exciter sets or as sources of power in industrial and marine plants. What is claimed to be a distinctive and exclusive feature is the oil-operated governor which is similar to that used on larger Westinghouse turbines. The reduction gear is of double helical design so constructed that there is the same amount of tooth surface in contact at all times between the gear and pinion.

Centerboard Barges Tested at Mobile

TWO combination river and seagoing centerboard barges built by the Alabama Dry Dock & Shipbuilding Company for the Tennessee Coal and Iron Company were tested recently at Mobile, Ala., for stability and their ability to follow a tug. The barges were loaded with bulk cargo to their marks and the centerboards lowered.

These centerboard barges are an innovation in that they do not require a crew on board while underway. It is understood they will be used in an all-water route for transporting steel from the company's plant at Birmingham to Texas ports. The barges are approximately 140 feet long, 25 feet beam and 6 feet depth. With the centerboard lowered the draft is 14 feet.

Generated on 2024-09-12 12:42 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Electrical Deck Auxiliaries

Deck machinery on Shipping Board
Diesel ships changed to electric drive

By A. O. Loomis*

THE conversion of the fourteen Shipping Board vessels, of which the *Tampa* was the first, has brought about a change from steam drive to that of the Diesel engine. In keeping with the best interests of economy the auxiliaries on these vessels are being electrified.

Electrical equipment of the Westinghouse make is used for the most part to drive the deck machinery on these vessels. The old windlasses, except the engines, have been retained. The cargo and warping winches are new; the greater portions of the steering gears are as originally installed. The steam engines have been removed and in their places electric motors and reduction gears substituted.

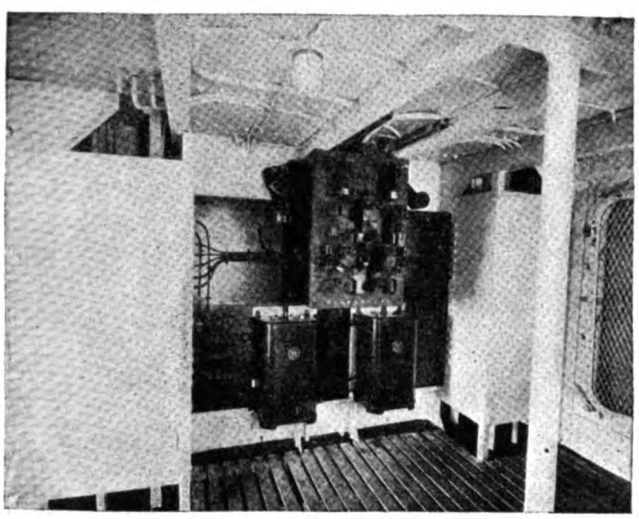


Fig. 1.—Cargo winch controllers

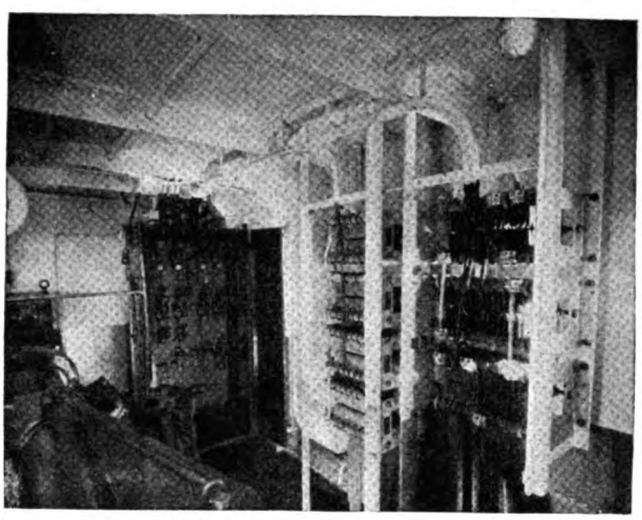


Fig. 2.—Steering gear controller

The Windlass

Starting from the bow and moving towards the stern of these vessels we meet first with the converted steam windlass, which has been stripped of its old steam appurtenances and a new gear reduction added so that two anchors can be heaved in from the average harbor bottom at the rate of 7 fathoms per minute. A motor speed of 450 revolutions per minute corresponds to the 45 horsepower rating for 15 minutes. Waterproof motors are used for all the deck applications.

Controllers are of the cam contactor or the magnetic contactor type. For the former there are protective panels having also magnetic contactors, relays, etc. Only controllers of the magnetic contactor type are used for the steering gears. On any single vessel the two different kinds of winch and windlass controllers are not mixed.

The windlass controller has the straight reversing connections. The non-watertight cam type controller is mounted directly below the control stand, which is located on the forecastle just aft of the motor. Forward and backward movements of the vertical control handle give rotation of the controller shaft. The controller handle is moved in a Z-shaped slot to prevent rapid plugging of the motor. Bringing the handle to the "off" position energizes the low voltage contactor so that normal operation of the equipment is established after an overload or low voltage condition. In addition to the overload protection a jamming relay is used.

Protective panels and contactor type controllers are deck mounted and are protected like the cam controllers and the resistors in a special compartment below the forecastle deck.

Master controllers for the semi-automatic equipment are also of the cam type with shaft horizontal and handle vertical. There is mounted on each controller stand a watertight push button station. The windlass motor can be stopped under any condition of operation when the emergency stop button is depressed by the operator.

The windlass, when needed in an emergency, must be "on the job." Electrified equipment fills this need admirably.

The closing of a circuit breaker in the engine room directs electrical energy to the windlass controller panel. This dispatch of energy is effected regardless of the weather conditions—an improvement over the old method of using steam.

Winches

The obvious improvement in the *Seekonk's* winch installation of including the winch resistors in a deck house and elevating the winches themselves on top of the houses was appreciated by ship operators as being the logical arrangement for the "well" type of vessel. Likewise on the Shipping Board vessels the same scheme, with elaborations, has been used.

Winch platforms are elevated at the base of each mast, of which there are two. Four winches are on each platform with two more amidships on the boat deck. In addition to the winches, motors and brakes, controller stands for the remote operation of the manual type controllers, also the

*Marine engineering department, Westinghouse Electric and Manufacturing Company.

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

master switches for the contactor controllers are placed on the platforms and boat deck amidships. Under the platforms there is ample space in each winch controller room for a work bench, which is extremely useful when so centrally located.

Resistors are stacked in a vertical column, one set in each corner of the room. The partitions surrounding these resistors are open at the top and bottom, also ventilating

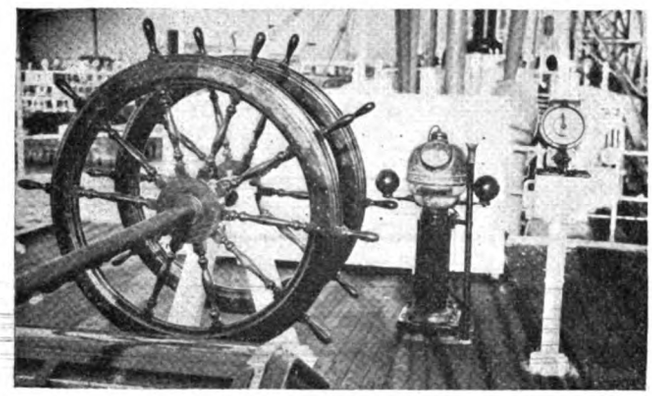


Fig. 3.—After steering station

port holes, communicating with the outside air, are located in the upper section of the winch house near each corner. This chimney-like arrangement makes possible excellent ventilation of the resistors. The convenient facilities for housing and protection of the winch control equipment has probably not been surpassed to date on any vessel of American register.

The winch itself is of special design and was built by the Lidgerwood Company for the Shipping Board. Members of the technical staff of the board have given considerable thought to the problem of handling cargo, also many data have been collected under conditions of actually loading and unloading cargo. These results were reflected in

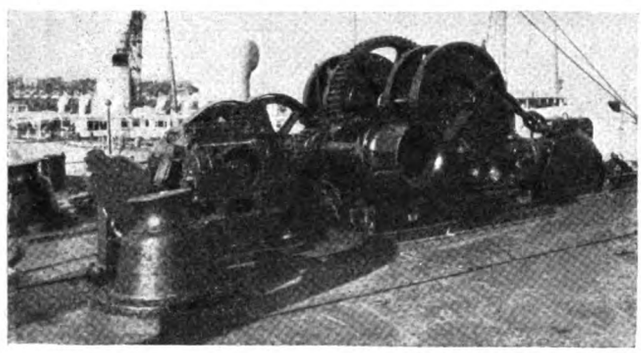


Fig. 4.—Windlass

the comprehensive specifications prepared under the direction of J. T. Welsh, chief of the technical section of the Shipping Board. The winches are giving the results expected; cargo is being handled as rapidly as it can be stowed; and the operators of the vessels thus far converted are satisfied with the equipment.

On the basis of the half hour rating of the motor the winches will hoist 3,900 pounds at 185 feet per minute. With the load removed from the hook the speed is nearly 500 feet per minute. The lowering speed of the empty and loaded hook is over 300 feet per minute. The automatic control of the lowering speeds in excess of those of light load values makes possible the uniform handling of the cargo when lowering a load by the burtoning system. The advantage is obvious when one sees, under the new arrangement, the loaded and light lines traveling at approximately the same speed with both controller handles on the last notch lowering. Thus the operator will find no difficulty or lose no time in moving both controller handles to the last notch when lowering the loads by the burtoning method.

The winch will handle a maximum load of 10,000 pounds on a single line.

The 25-horsepower type MC motor is used. The rating for the cargo winches is for one-half hour, the winding is series and the rated speed is 520 revolutions per minute. The motor is waterproof according to the definition set forth in the A.I.E.E. marine rules.

The location of the operating stands and master controllers on the elevated platforms forward and aft furnishes excellent means for the inspection of the cargo handling operations. This has the further advantage of raising the

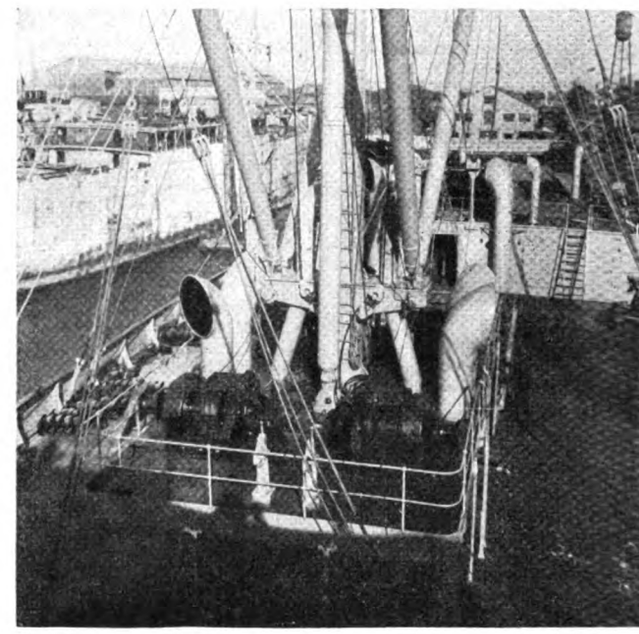


Fig. 5.—View on deck showing winches on elevated platform

motors and master controllers out of the "well" and thus placing them farther away from the action of the waves.

Warping Winch

The warping winch, in addition to having the regular mechanical parts of the cargo winches, has an additional gear ratio and an extended shaft having warping heads on both ends. Two suitable bearings are placed just inside of the warping heads. Lines can be run directly aft from the warping heads and used either to warp the vessel or, in an extreme emergency, to attach to chains at the after end of the rudder, thus making it possible to steer the vessel when other means have failed.

The 25 horsepower warping winch motor is compound wound and is interchangeable with that of the steering gear so that in the event of casualty to the latter, the crew can move the winch motor a few feet aft into the steering gear room and make the substitution by which the gear will again function in a normal manner.

The control for the warping winch, although one size smaller than that of the windlass, has its connections and manner of operation the same as for the windlass.

Steering Gear

Coming to the steering gear, one of the most important applications on shipboard, we find that much has been

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

done on these vessels to make the system flexible. As already described the warping winch motor will serve in an emergency; Sperry's "metal mike" will do the trick of continuous automatic steering when the vessel is in open water. For normal wheel steering the gyro course-changing wheel is used as a handwheel which operates the automatic control according to the desire of the helmsman. Under this condition the gear will effect the so-called "follow up" steering scheme. The "non-follow-up" type of steering is obtained by use of the auxiliary control handle at the top of the gyro pilot or the handle of the Westinghouse master controller which is located above the deck house on the poop deck. It is likely that this form of steering will be used only infrequently on account of the great convenience of automatic steering and the popularity of using the gyro wheel for hand operation.

The least popular form of steering on these vessels is from the hand gear on the poop house, where, in an emergency, four men can manipulate two wheels and thus turn the rudder comparatively slowly.

The compound wound motor which has good starting characteristics and can be used in connection with the simple dynamic braking circuit is geared to the right and left hand screw steering gear. The solenoid brake attached to the motor shaft assists the dynamic braking in bringing the armature quickly to rest when the controller is in the "off" position.

The control panel is entirely enclosed in a large sheet steel non-watertight cabinet having two folding doors in front and removable plate in the rear. Open sherardized cast iron resistors are used in connection with this application. The watertight limit switch is mounted where stops on the tiller mechanism can engage the arm of the limit switch at the extremes of the rudder travel.

The control scheme for steering gives two speeds of the motor—one shunted and series armature resistance in the circuit and the other with the motor directly across the line. Normal automatic steering includes full speed operation of the motor. However, a switch located in the gyro pilot can be opened so that only slow speed steering will result. Such operation is advantageous in stormy weather.

When the hand steering lever is used in the pilot house to give non-follow-up steering, a selection of either of the two speeds is possible. However, when the after steering station on the poop house is in operation the hook-up is such that only slow speed steering will result from a movement of the master controller handle in either direction.

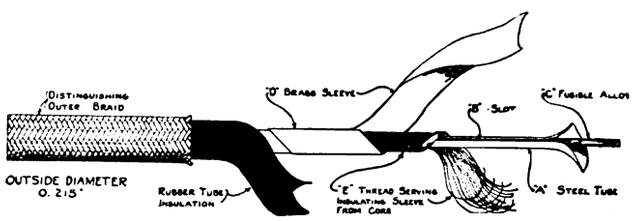
High speed operation of the steering motor will move the helm from hard over starboard to hard over port in 20 seconds. The vessel can be turned in a great circle in approximately 7 minutes.

By means of a watt-hour meter permanently installed on the switchboard, it is possible for the companies operating these vessels to obtain records of the power consumed by the deck equipment forward and aft and also by the steering gear. The knowledge of the power costs for cargo handling operations, steering the vessel, etc., is of much interest and value to the operators. Incidentally, this fact is another example of the advantage of electric over steam power on shipboard.

Garrison Fire Detecting System

WORKING on the principle of protecting property from loss by detecting fires at their start, the Garrison Fire Detecting System, Inc., 79 Madison avenue, New York, has developed an automatic method of fire detection which is applicable to all manner of structures ashore and to ship installations. A number of different type systems have been developed for various forms of service.

The heart of all Garrison systems is the automatic continuous thermostatic wire, details of the construction of which are shown in the accompanying illustration. The wire is small, being about 3/16-inch diameter and can be easily installed. When this wire is connected as part of a system, the two contactors, the core and the sleeve, constantly carry electric current. The wire, which is moisture proof and water proof, is positive in operation. When the alloy of which the core consists is heated to the prescribed temperature, it expands and the same laws of physics govern the condition as are in effect when water freezes—it expands and breaks its container; that is, when the alloy fuses it expands and spurts through the threads making contact with the brass tape, thus a short circuit is formed and a fire alarm is given. All fires generate heat, although in many cases there is no smoke or actual flame. The Garrison system operates in the presence of heat only. After a small portion of the wire has been fused that part may be readily replaced at a low cost. Because of the fact that the



Sketch showing construction of fire detecting wire

Garrison system operates on the closed circuit principle, the wire constituting the thermostat is under supervision constantly and cannot be taken out without giving a "trouble signal."

In addition to sounding gongs, locating the fire and transmitting the signal, the system has other features including the automatic turning on of emergency lights, the closing of fire doors, draining tanks of inflammable liquids, etc.

In an official test held in the New York city laboratories of the underwriters, the continuous thermostatic wire was strung in the regulation manner on a 12½-foot ceiling. A standard alcohol fire pan on the floor was included. The official time which elapsed before the Garrison alarm sounded was 52 seconds.

Four principal systems are developed by Garrison to meet a wide diversity of needs. In addition special systems can be developed by the engineering staff of the company to meet any unusual rquirements.

INSTALLATION ON THE GUINEVERE

A typical marine installation of the Garrison automatic and manual fire alarm system is that installed on the auxiliary schooner yacht *Guinevere*, Edgar Palmer, owner. This installation is designated as the 24-NC-6 Garrison supervised automatic and manual fire alarm system which has been approved by the laboratories of the National Board of Fire Underwriters. There are six fire detecting circuits disposed as follows:

Circuit No. 1. Space occupied by the crew's quarters, crew's galley and the forepeak and store room in the forward hold.

Circuit No. 2. Port officers' quarters and officers' mess.

Circuit No. 3. Starboard officers' quarters, owner's galley, owner's pantry.

Circuit No. 4. Engine room, motor room, shaft alley and forward deck house. The engine room and motor room fire detecting wire is special 250-degree fusing alloy wire.

Circuit No. 5. Owner's quarters, main cabin, library, stateroom, after chart room, after deck house.

Circuit No. 6. Lazaret. In this space a special 160-degree fusing alloy armored wire is used.

In order to provide a means for turning in an alarm for an exposure fire, test and drill calls, five break glass alarm

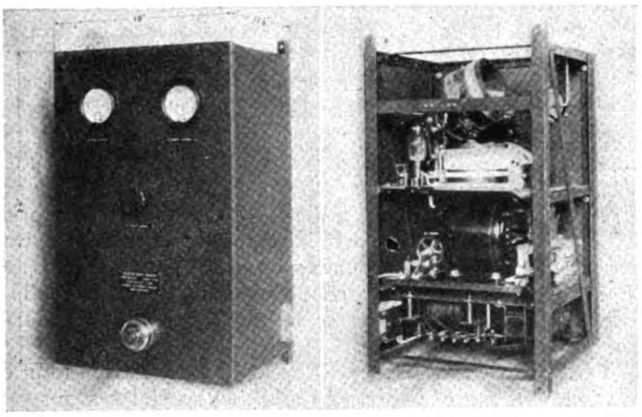
Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

boxes are installed. These are located respectively in the crew's quarters, the port passageway, the starboard passageway, inside the forward deck house, the forward end of the after passageway and the owner's quarters. The fire signal is given upon vibrating electric gongs located in the crew's quarters, officers' quarters, chart room, main cabin and engine room. These vibrating gongs are operated from the fire alarm batteries thus being independent of the ship's lighting circuit. The main control panel is located in the engine room. Red pilot lights are used to indicate visually the respective circuits on which fire has been detected. Two auxiliary lamp panels equipped with buzzers to direct attention, one located in the chart house forward and the other in the owner's stateroom, are also provided. The main fire alarm battery consists of a 24-volt storage battery and a 6-volt storage battery to serve as a "trouble" battery.

The New Ship Radio Beacon

THE Kolster Radio Beacon, developed by engineers of the Federal Telegraph Company, San Francisco, Calif., as announced on page 31 of our January issue, is a device for use on board ship as an aid in preventing collisions in fog. When used in conjunction with the radio compass a new means is provided for one ship to take a bearing on another in fog when within a 10 or 12 mile zone of each other.

Being forewarned of the presence of another vessel, inside what may be termed the danger zone, perhaps dead ahead



General view and interior of Kolster ship radio beacon

or crossing, bridge officers can be on the lookout for the whistle as the ships come closer together. Even at close quarters, there is an opportunity to make excellent use of the new ship radio beacon as there is no danger of false echo in fog as there is in the case of the whistle.

The ship radio beacon is an outgrowth of the shore radio beacon idea which was instigated by Dr. Kolster and developed and made a practical every day aid by the U. S. Bureau of Lighthouses. The use of the radio compass on board ship in the personal hands of the navigating officer is a far more certain method of obtaining a ship's position than asking a shore compass station to give it. There is no waiting in turn while the shore station takes bearings on other vessels as hundreds of ships could all take bearings on one lighthouse radio beacon at the same time.

The entire unit is only 24 inches high, 15 inches wide and 12½ inches deep. It can be mounted on a bulkhead or placed upon a table. Bulkhead mounting is preferable, however. The front panel contains a snap switch for starting the beacon, a power control knob and two meters, one for radiation and one for filament current. The power control knob is set and left in position where the filament current reads 2.5 amperes. A ship's voltage may be anything from 80 to 120. By means of the power control knob, the filament current may be set at the correct value, 2.5 amperes, for any voltage within this wide range. This makes the beacon singularly adaptable to all types of ships. Once set, the power control is not again disturbed. It is then only necessary to turn on the snap switch to start the beacon operating.

The transmitter behind the panel is comprised of two 7½-watt vacuum tubes connected in parallel for safety and long life. An antenna coupler which locks in place connects the antennæ electrically to the rest of the circuit. All connections are locked so that the beacon cannot oscillate on any wave length except 850 meters. This does away with all chances of causing interference to other channels such as the navy compass stations on 800 meters.

A motor serves to drive the power interrupter or chopper wheel and the automatic signalling mechanism. A system of special transformers and condensers is so arranged and connected with the chopper wheel that power is taken direct from the ship's mains without the use of any intermediary motor generator set as is required in most of the usual radio transmitters.

Intermittent continuous waves, or ICW, are transmitted and the signal characteristic which has been adopted pending legislation on the subject consists of a series of one second dashes for 30 seconds followed by a silent period of 30 seconds. This continues automatically as long as the beacon is left turned on.

The signal characteristic is controlled by a small disk about 2 inches in diameter and can be easily changed in a few moments time, in case future regulations adopt some other signal as the standard for mobile radio beacons.

A small single wire aerial is used in connection with the ship radio beacon from 50 to 100 feet in length depending upon the conditions found on board ship. A ground connection to the ship's hull is employed in the usual manner.

It has been found that a radiation of approximately ½ ampere from the beacon aerial provides a good loud signal in a standard Kolster radio compass inside the desired zone of from 10 to 12 miles. The desired radiation is easily obtained by the proper length of aerial and is done by the installers and not again changed.

When once installed, the ship radio beacon is very easy to operate and requires very little attention. An occasional drop of oil on the transmitter mechanism and motor bearings is about all it requires.

Although the Kolster Radio Beacon has been designed for use on board ship it can also be used as a secondary shore beacon at harbor entrances, on small islands inside harbors and on piers. The signal transmitted can be different in each case. For instance at a harbor entrance the beacon on one side could transmit a dot and a dash, the Morse letter "A" and the beacon on the left could transmit an entirely dissimilar group such as the letter "B", one dash and three dots sent very slowly so that any navigator could easily identify it. A leading mark inside the bay could transmit still another character and a dock still another and inasmuch as the range of each beacon can be controlled from zero to maximum, so that a dock beacon could have a range of one mile or less if required, there is every good reason to believe that a vessel equipped with a radio compass could find her way into a fog-bound harbor and right up to dock by means of radio compass bearings.

A license to operate the new radio beacon as a shore beacon on 850 meters would of course have to be obtained from the Department of Commerce, but a new aid to navigation which makes for safety of lives and property as well as the saving of time and money should receive favorable consideration.

Generated on 2024-09-12 12:31 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Cutless Rubber Bearings

Their use in marine propeller shaft bearings lessens wear and vibration

By Burton B. Annis*

SINCE the inception of the screw propeller, there has been a constant search for a bearing which would satisfactorily carry the load of the propeller shaft under the adverse conditions which always prevail at the stern tube or strut. Many complicated designs have attempted to exclude water and foreign material in order to obtain an oil lubricated bearing, but until recently the old standby, lignum-vitae wood, using water as a lubricant, has been accepted as the most practical bearing available for large shafts. This material practically assures a trouble-free bearing for a limited length of time, but this assurance is obtained only at the expense of a scored shaft liner, frequent

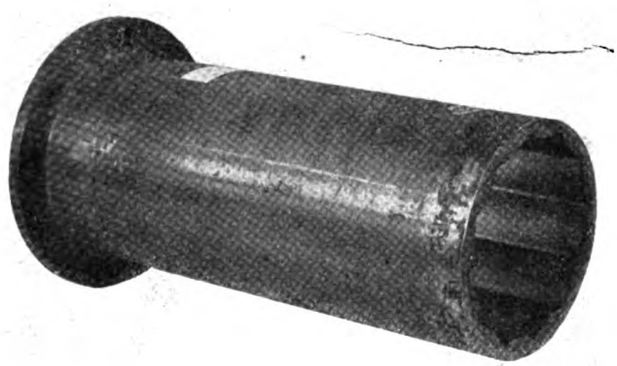


Fig. 1.—Standard cutless rubber bearing for 9½-inch shaft

and expensive dry docking charges, and severe vibration, which is a serious drawback on passenger vessels.

Within the last few years a new bearing, consisting of a metal sleeve, lined with a tough, resilient rubber compound, similar in texture to a good automobile tire tread, has been giving such phenomenal service when installed in struts and stern tubes in various classes of service that it bids fair to supplant the standard lignum-vitae construction along with the various mechanical contrivances which have been designed to obtain a metal bearing surface. Rubber, especially of such a texture as indicated, would at first seem altogether inadequate for such strenuous service, but when it is realized that rubber stands up under such terrific service as it must in a tire tread, as compared with hardened steel skid chains which are ground through in a few hundred miles, and that the coefficient of friction of wet rubber on metal (as a rubber heel on a wet steel manhole cover) is very small, its practicability becomes more apparent.

It was with these facts in mind that a large rubber company conducted an extended series of tests, both in the laboratory and on small, and later on larger, vessels of various types, which have developed the type of bearing shown in Fig. 1 and known as the "cutless" rubber bearing.

*Sales engineer, The B. F. Goodrich Rubber Company, Akron, Ohio.

This bearing, as is at once apparent, is similar to the standard segmental lignum-vitae bearing in that it presents a number of faces to support the shaft, these faces being separated by longitudinal grooves for the passage of lubricating and cooling water. The faces are rounded, as shown, in order to take advantage of the resiliency of the rubber,

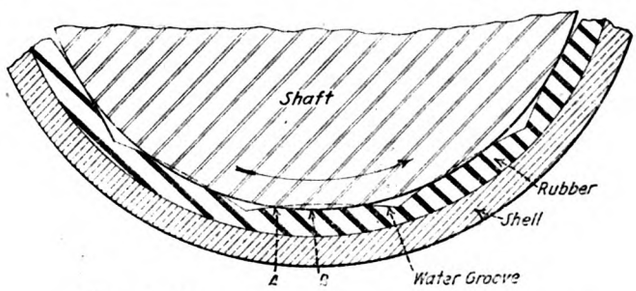


Fig. 2.—Transverse section through bearing

Note slight deflection of shaft in resilient rubber which gives a crushing effect, absorbing shocks and vibration of the shaft.

as may be seen more plainly in Fig. 2, which is a transverse section. The load is not uniformly distributed over the face of the rubber, as would be the case if the profile of the bearing conformed to that of the shaft, but varies from zero at *A* to a maximum at *B*. This allows the lubri-

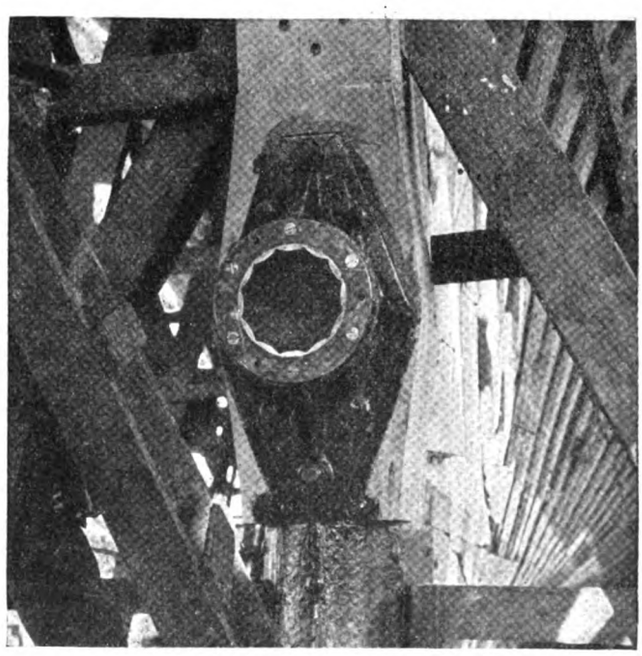


Fig. 3.—Cutless bearing in place ready for shaft

cating film of water to form at a point of low pressure, which is of great importance due to its low viscosity as compared with oil. After the film is once formed, it is dragged by its adhesion to the shaft through the length of the face. Once formed, such a film is destroyed with difficulty provided the speed of the shaft does not fall below a very low

Generated on 2024-09-12 12:32 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

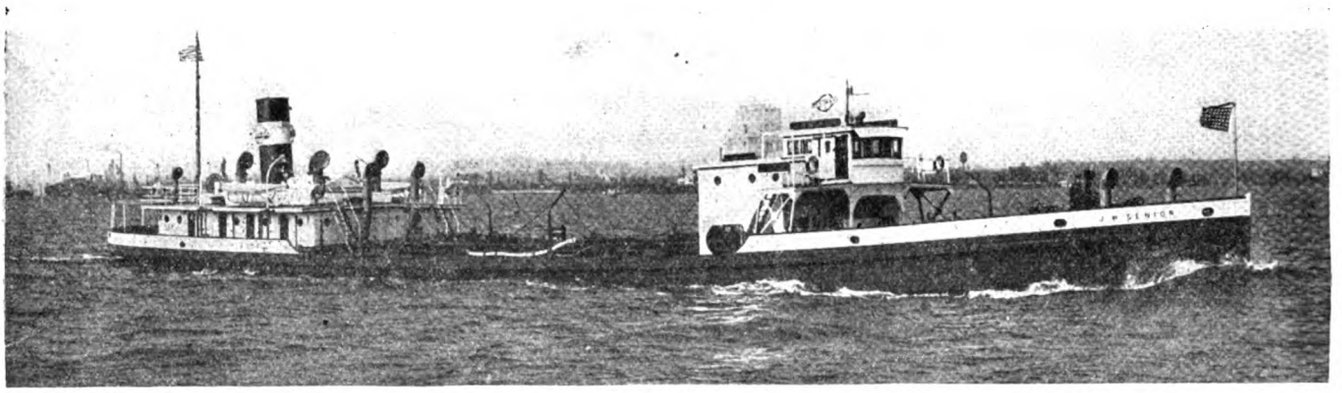


Fig. 4.—This oil barge has a three-year-old rubber bearing still in good condition

critical speed, which depends on the temperature, degree of pollution of water, etc., and the grooves are spaced closely enough that the temperature of the thin film of water is not raised dangerously high before a fresh supply is reached. As will be seen, there is no wiping edge presented to the shaft at any point, so that perfect lubrication is obtained at all ordinary loads and speeds.

The superiority of rubber is even more apparent in sandy or dirty water and under these conditions records have been made where rubber has outworn previous installations of babbitt or lignum-vitae as much as nine or ten times. This comparative immunity to the action of sand is due to the fact that a particle of sand cannot lodge in the rubber as it can in a hard material, but is depressed into the rubber and then rolled into the adjacent groove by the shaft, where it is washed to the outside of the bearing. Because of this rolling, instead of dragging action, the shaft acquires a highly polished or burnished surface, in contrast to the deeply scored and grooved appearance which it quickly assumes with a hard surfaced bearing.

A contributing factor to the diminished action of the sand particle is that, with a rubber surface, the unit load on the sand is approximately that of the surrounding rubber, while the unit load on a grain of sand caught between a shaft and a hard surfaced bearing rises to an enormous value, as before it sinks into the bearing or shaft surface it momentarily carried a large proportion of the load of the shaft on its microscopic surface.

Requirements for Successful Operation

Due to the poor heat conductivity of rubber, which precludes any possibility of the heat of friction being conducted away from the shaft and dissipated by the outer surface of the bearing, all of this heat must be carried off by the lubricating water. Although the quantity of heat generated is very small, it will gradually build the temperature up to a dangerous degree, unless a means is provided to eliminate it. This requires a small but positive flow of water at all times, although the amount is so small that in large installations the leakage through the stern gland into the bilge is usually sufficient.

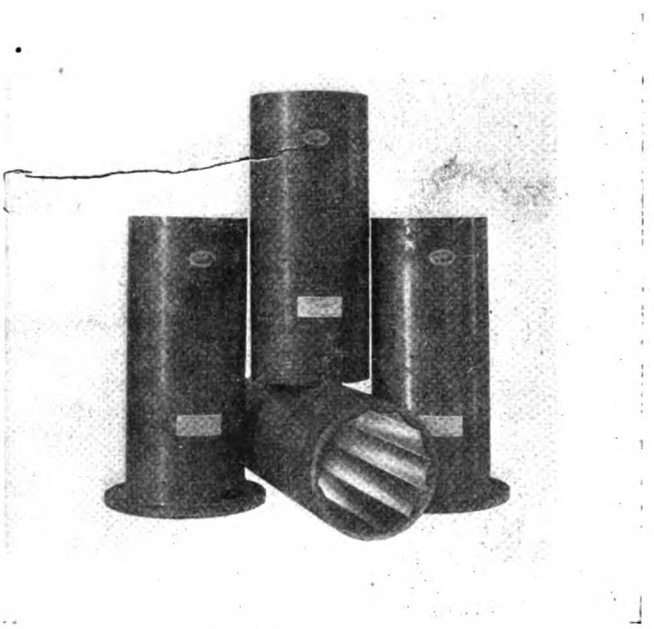


Fig. 6.—Bearings installed in the Golden Gate

A source of clean water should be supplied, however, so that water may be forced from the inboard end through the stern tube to the outside of the vessel. In the strut, the motion of the bearing through the water supplies plenty of

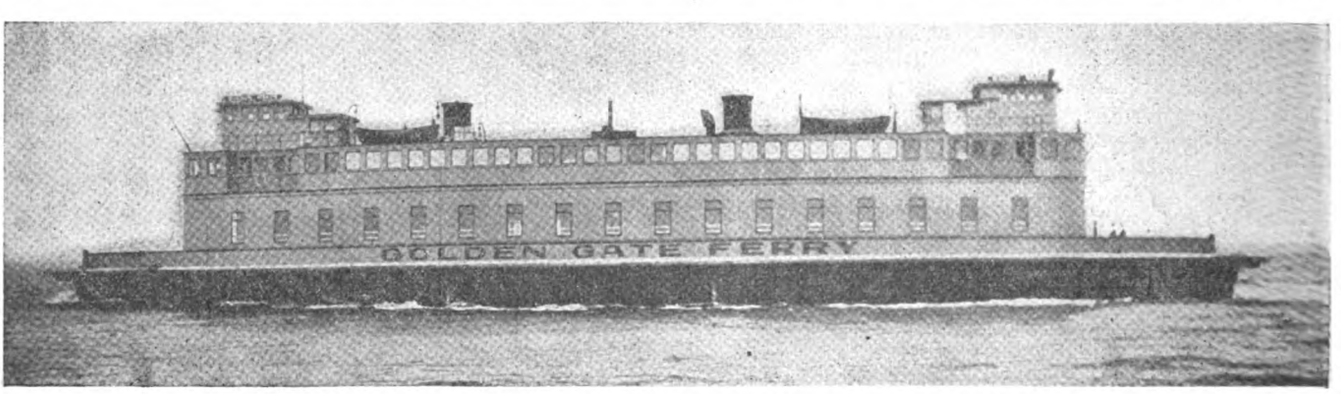


Fig. 5.—Ferry boat Golden Gate equipped with cutless bearings

Generated on 2024-09-12 12:29 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

cooling and lubrication, provided fairwaters, if fitted, are drilled at both ends to allow free circulation. The only other special requirement of these bearings in installations where other types have been used is that the shaft surface must be smooth and unscored, as by using a new journal surface from the start the life of the shaft will be practically indefinite.

SOME TYPICAL INSTALLATIONS

As an example of the abrasion resistance of the cutless rubber bearing, a self-propelled barge on the New York State Barge Canal is of interest. This barge regularly replaced its babbitted bearings three times a season, but is now on its third year with rubber bearings, with the shaft in practically the same condition as when installed, and the original bearings apparently good for seven seasons more.

Fig. 7.—Dredge cutter head fitted with rubber bearings

The modern Diesel-electric ferry boat *Golden Gate* of the Golden Gate Ferry Company, San Francisco, Fig. 5, was equipped with the four bearings shown in Fig. 6, when launched. After 35,000 miles these bearings were inspected and found to have been so slightly worn (approximately 1/16-inch) that they were left in place and three similar vessels now under construction for the same company were designed to accommodate the same equipment. The shafts of the *Golden Gate* were not worn or scored, which is all the more remarkable in view of the type of service in which she is engaged, being almost constantly in shallow sandy water.

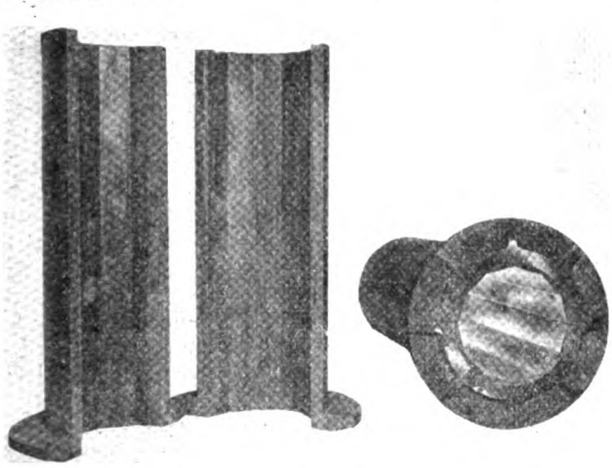


Fig. 8.—Split cutless bearing for 10-inch shaft

While these bearings are becoming most widely known for marine service, there are numerous other applications where they are proving to be an economic advantage over former practice. One of the toughest assignments for a bearing is that of supporting a cutterhead on a suction dredge. Fig. 7 shows such a cutter, and on one head with a bearing 11½ inches inside diameter, a record of six times the life of a babbitted bearing on another dredge in the same service has already been obtained, with the cutless bearing still in operation. Rubber bearings are also coming into use on centrifugal pumps, shafting for deep well pumps and in any submerged location. They are made split, as in Fig. 8, or may be installed by the manufacturers in any odd shaped casting or forging. They have been successfully used on all classes of equipment from hydraulic turbines to passenger vessels, and in sizes from ½-inch to 24 inches inside diameter.

CONCLUSION

In conclusion, it is evident that we have an application of a new material to submerged bearings, using water as the sole lubricant, whose coefficient of friction is of the same order as that of oil lubricated metal bearings. Furthermore, these bearings have passed through the experimental stage, and have reached the point where rubber is a tried and proven addition to our list of engineering materials for bearing construction.

Contra-Propellers Increase Liner's Speed

THE following, referring to results obtained with the *Conte Rosso* of the Lloyd Sabaudo Line, appeared in a recent issue of *Syren and Shipping Illustrated:*

Astonishingly good results have been achieved by the Lloyd Sabaudo by fitting Star contra-propellers to their 17,048-ton liner *Conte Rosso.* This vessel last week completed her first round voyage between Genoa and New York with the fitting installed, and we are advised on good authority, that her speed has undoubtedly been increased by about half a knot, although extremely heavy weather was experienced for two whole days on the return voyage. Between Gibraltar, Naples and Genoa the *Conte Rosso* steamed at 19.10 knots on the same fuel consumption and same number of revolutions as during all her previous voyages in the past five years, during which her average speed was 18½ knots. As a result of the very satisfactory outcome of this experiment, the Lloyd Sabaudo have decided to fit Star contra-propellers to their *Conte Verde* and *Conte Biancamano* and also to their new *Conte Grande,* which is building at Monfalcone and is expected to be ready for delivery in about twelve months' time.

The fact that the inboard guide vanes alone resulted in an increase in speed of one-half knot on one of the large "greyhounds" shows that the contra-propeller on twin screw ships is not only justified but necessary.

Vincent Astor Orders Large Diesel Yacht to Be Built Abroad

POSSIBLY the most interesting yacht contract that has been let in recent years is that for the large, seagoing Diesel yacht that is now under construction at the Krupp shipyard in Germany for Vice-Commodore Vincent Astor, of the New York Yacht Club, whose name has been so many years associated with yatching in this country.

The new yacht, which has been designed by Mr. Theodore E. Ferris, naval architect, 30 Church street, New York, is

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

essentially a heavily built, substantial, seagoing craft of rugged design having the appearance more of a special type of naval vessel than of the conventional yacht.

The vessel has unusual freeboard, a straight and slightly raking stem and a cruiser stern. The machinery and stack are located amidships. Two pole masts are provided to carry steadying sails and to be used for signalling purposes.

The dimensions are as follows:

Length overall	263 feet	10 inches
Length on waterline	260 feet	0 inches
Beam	41 feet	6 inches
Mean load draft	16 feet	0 inches

The machinery consists of two Sulzer 2-cycle Diesel engines of 3,000 horsepower to give the yacht a sustained speed of 15½ knots. Fuel, water and stores can be carried sufficient for extended ocean voyages, and the whole conception of the design is to produce a vessel specially adapted for off shore work, while at the same time most comfortable for cruising along the American coast.

Full advantage has been taken of the possibilities afforded by the large dimensions of the yacht to lay out most comfortable quarters. Three large cabins, each with bath, for the owner and guests are placed on the main deck just forward of amidships where they will have perfect ventilation and will be as free from motion and engine room noises as any part of the ship. In addition, there are six large and comfortable staterooms with four baths for guests on the berth deck aft.

The dining room will be forward on the upper deck, with a clear view from its windows. In addition there will be the usual other public rooms, consisting of a library and living room. The interior decoration work is being handled by Cox & Stevens, New York.

First Pulverized Coal Installation on Board Ship to Be Tried Out

By Commander Warren C. Graham, U.S.N.R.*

THE first marine installation of pulverized coal is now being made at New Orleans on the S.S. *Illinois*, a stern wheel towboat of the Inland Waterways Corporation. Credit for making this first marine pulverized coal installation belongs to General T. Q. Ashburn, chairman and executive, and A. R. Wurtele, chief engineer, both of the Inland Waterways Corporation.

The next marine installation will probably be on the S.S. *Bellepline*, of the U. S. Shipping Board, equipped with Scotch marine boilers. On this ship will be installed Kennedy airswept tube mill pulverizers.

Tests will be conducted on the *Illionis* for a period of 90 days, under actual operating conditions. So important are these tests considered that the U. S. Navy, through its chief engineer, Admiral John J. Halligan, Jr., is sending Commander Evans and Lieutenant Commander Malloy; while the Fuel Conservation Committee of the United States Shipping Board, through Captain McAllister, head of the American Bureau of Shipping, is sending C. J. Jefferson, head of the Technical Section of the committee, to be present during the trial runs. Captain A. O. Ackard, marine superintendent, of the Carnegie Steel Company, Pittsburgh, Pa., will also be present as will representatives from different engineering societies and manufacturers.

The *Illinois* is equipped with two United States Shipping Board standard Conti type boilers, each having 4,200 square feet of heating surface, equipped with economizers and superheater tubes in the uptakes, operating on 250 pounds steam pressure, 30 degrees F. superheat.

*Consulting Engineer, New Orleans, La.

Two types of unit pulverizers will be installed, one a high speed machine and the other a ball tube mill. As representative of the high speed machines, the Aero unit type pulverizer has been selected and will be connected to one boiler. As representative of the slow speed ball mill, the Kennedy airswept tube mill has been selected and this will be connected to the other boiler.

The boiler equipped with the Aero mill will be fitted with Waite & Davey tile for preheated air and will be installed by the A. K. Miller Engineering Company, of New Orleans.

The boiler equipped with the Kennedy mill will be fitted with Liptak air cooled side and rear walls and floor and will be installed by the Graham Engineering Company, of New Orleans.

Shipbuilding in France

ONE of the outstanding events in the shipbuilding industry in France at the present time is the completion at the Penhoet yard of the new liner *Ile-de-France,* 791 feet long of 40,200 gross tons, to be placed in service by the French Line on the Havre-New York line. It is expected that the new ship will sail from Havre on her maiden voyage on June 22. This vessel is equipped with 32 Prudhon-Capus boilers and 4 Parsons turbines developing 52,000 horsepower. When the new liner goes into commission the French Line will have on the New York run three first class liners, the *Ile-de-France, Paris* and *France,* in addition to four cabin class vessels, the *De Grasse, Rochambeau, La Savoie* and *Suffren.*

When the *Ile-de-France* has been delivered to her owners, the 3,000 workers now employed on her completion will be thrown out of employment and this will still further complicate the serious unemployment situation now prevailing in the French shipbuilding industry. As evidence of the disastrous effects of this depression, one of the biggest shipbuilding concerns in France, the Chantiers et Ateliers de la Gironde, was recently forced into liquidation. Such conditions are due to the continuing lack of orders from French shipowners and to the complete cessation of foreign orders resulting from the rise in the value of the franc.

Proposed Measures for Stimulating Shipbuilding

In this crisis the French government is considering steps to assist the shipbuilding industry but so far nothing definite has been accomplished. One scheme, consisting of custom exemption on materials imported for building and fitting out vessels, has been proposed by the Government and embodied in the draft bill providing for the general revision of French custom tariffs, but the shipbuilders have issued strong protests against the abrogation of custom duties on engines and machinery parts, and the scheme has finally been given up. Other measures, notably the lending of monies to shipowners for building new ships, are being considered by the Government but so far without result. Of special importance are the long delayed orders for two new 25,000-ton liners to be placed on the Bordeaux-South America run by the Cie Sud-Atlantique. This company lacks funds for building the ships, and at one time it was contemplated having them built in Germany under the Dawes plan, but French shipbuilders have naturally opposed this plan, and it is now ascertained that they will be built in French yards, the necessary monies being derived either from the State or from a private loan issued in France or abroad.

In view of the scarcity of orders, French shipowners continue to be very tardy in adopting Diesel engines. Some progress has been made, however, during recent months. The Messageries Maritimes, who recently placed in service

Generated on 2024-09-12 12:31 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

the motorship *Théophile-Gautier,* the first French motor passenger liner, have had the keel of a second motor liner laid at the La Ciotat yards of the Sociéte Provençale de Constructions Navales. This vessel is to be propelled by two Sulzer 8,000 horsepower engines. On the other hand, the Chargeurs Réunis—which have now passed under the control of the Fabre Line—have decided to have their motor cargo vessel *Camranh* converted into a passenger liner, and renamed *Brazza,* for service on the western coast of Africa. The work is to be carried out at the Penhoet yards. The latter firm, which recently delivered to the Companhia Naceonal de Navegacao Costeira, Rio-de-Janeiro, the passenger steamer *Itaimbé* (the first of a series of three sister ships), has secured from the Turkish Government an order for the overhauling of the ex-German cruiser *Goeben.*

NAVAL WORK

On April 4 the motor tanker *Le Loing* of 5,900 tons deadweight, which is the first motor tanker built for the French Navy, was launched, nearly completed, at Le Trait yards of the Ateliers et Chantiers de la Seine Maritime—one of the busiest French yards just now. The Navy Department has also just placed orders for a 10,000-ton cruiser, three 2,690-ton flotilla-leaders, four 1,500-ton torpedo-boats, six 1,500-ton submarines, one submarine minelayer and one submarine tender. The 1,500-ton submarines are each fitted with two Diesel engines each developing 3,000 brake horsepower. These engines are of two types, the Sulzer and Schneider. Most of these orders have been placed with private yards thus affording some relief against unemployment.

Inclining Experiment—U. S. S. Florida

By Lieutenant Commander G. C. Manning, C.C., U. S. N.

IN performing the inclining experiment on the battleship *Florida* upon completion of major alterations (modernization), problems of a different order from that usually encountered even in inclining a ship of this type were met. The beam of the ship below water was materially increased but the main deck was not altered. As a consequence the metacentric height of the ship was known to have been materially increased and to have an approximate value of 12 feet when the ship was inclined. The displacement of the ship as inclined was about 20,000 tons. An inclination of 2 degrees was desired. From the above it was apparent that an inclining moment of about 8,500 foot tons would be required. The maximum width of the main deck was 79 feet. Making allowance for the estimated distance of the center of gravity of the inclining weight from the deck edge and the difference between the maximum breadth of the deck and the breadth at locations where inclining weights could be moved, the maximum lever arm was 30 feet. If the ship were to be inclined in the usual way, a weight of 280 tons was required.

A number of difficulties presented themselves in connection with the assembly and handling of such a weight and providing adequate support to the deck under it. The possibility of inclining the ship by flooding compartments next to the shell was then considered. Several tanks were available which have a capacity of approximately 70 tons and a center of gravity 50 feet from the centerline plane of the ship. These tanks were provided with sea valves so that they could be flooded from the sea and their average width was so small (about 5 feet) that any free surface would have no appreciable effect on the accuracy of the experiment. From the approximate values of displacement and transverse metacentric height, it was determined that the flooding of two tanks would give an inclination of 1½ degrees, which was accepted as sufficient. The only valid objection to the use of water in the tanks for inclining weights was the time required for filling and emptying. Flooding from the sea, due to the small initial head and its progressive decrease during flooding, was estimated to require from twenty minutes to half an hour: to pump out the tanks would take even more time. It was therefore decided not to attempt to empty the tanks during the experiment but to make allowance for the progressive increase in displacement which would occur.

To insure an accurate determination of the metacentric height four independent values were desired, requiring four independent inclinations. Four values were desired so that if one result was found to differ considerably from the other three it could be discarded and a mean of the three values which were in substantial agreement accepted as the true value of the transverse metacentric height of the ship as inclined. To obtain these without emptying any tanks and to have at least one inclination on each side as well as to provide an approximate check on the initial readings the following procedure was adopted:

1. Flood one port tank.
2. Flood another port tank.
3. Flood one starboard tank.
4. Flood second starboard tank.
5. Flood third starboard tank.

Steps 1, 2, 3 and 5 gave independent values of the metacentric height. 1, 2 and 3 corresponded to port inclinations, and 5 to a starboard inclination approximately equal in amount to the port inclinations obtained in 1 and 3, while 4 gave an approximate check of the initial readings.

Going to the trouble of determining a large number of independent values of the metacentric height in an experiment which took as long as this one did was justified by the results. Three of the four values obtained were in very close agreement. The fourth differed from the mean of the other three by about 15 percent. While such a variation would not be excessive in the case of ships of small or moderate metacentric height, it was considered excessive in a ship of 12 feet G. M. and discarded.

To make certain that any change in conditions on the ship affecting the accuracy of the experiment would be detected promptly draft readings were taken at each time the pendulums were read. Three pendulums each about 270 inches long were used. The drafts were read at the forward and after draft marks for displacement calculations and amidships on both sides as a check on the forward and after readings and pendulum readings. Special forms were prepared to facilitate calculations and approximate computations of values of G. M. made during the progress of the experiment to give warning of any unusual variation which might indicate an error in the performance of the experiment. The results obtained were in remarkably close agreement, the maximum variation from the mean value being only about 2 percent.

A Useful Sounding Rod

By J. F. McMullen

THE use of an ordinary rod for sounding the double bottoms when taking fuel oil is unsatisfactory due to oil getting in the sounding pipe and preventing close reading of the measurement. It is common practice to use a piece of round or square rod with the inches marked on it. This becomes smeared with oil when it is raised, making it difficult to get an exact measurement.

If the rod is made of 1-inch angle, or a small channel, this trouble will be eliminated and the depth of oil can be clearly seen on the inside or protected part of the rod.

Generated on 2024-09-12 12:34 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Cleaning the Interior of the Hull of the Steamer Washington Irving

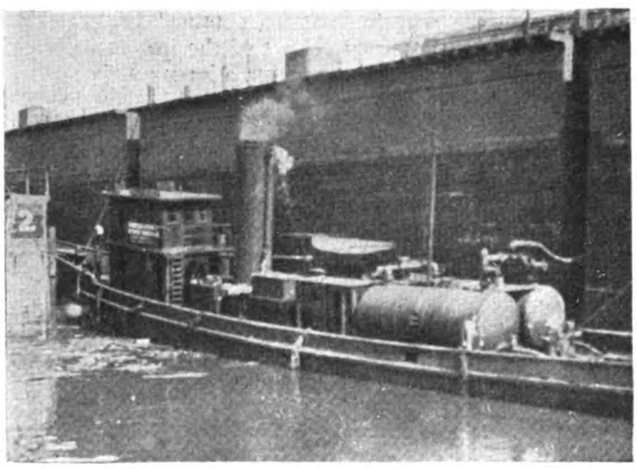
ONE of the most interesting phases of the work of salvaging and rehabilitating the Hudson River Day Line steamer *Washington Irving*, which was rammed and sunk in the North River, July, 1926, was the problem of cleaning the vessel of the mud and silt which accumulated in all parts of the hull during her 9 months on the bottom.

After being raised by Morris & Cummings, a New York salvage firm, the vessel was placed in drydock at the Clinton yard, Brooklyn, of the Todd Shipyards Corporation. When the *Washington Irving* finally became available for inspection the salvagers and shipyard crew found that nothing could be undertaken in way of repairs until the vessel was made accessible by the removal of quantities of mud and slime and débris. In the 'tween deck spaces the muck lay from 6 inches to 4 feet deep and in some cases solid masses of mud combined with chairs, tables and other light movables had packed in drifts against the bulkheads.

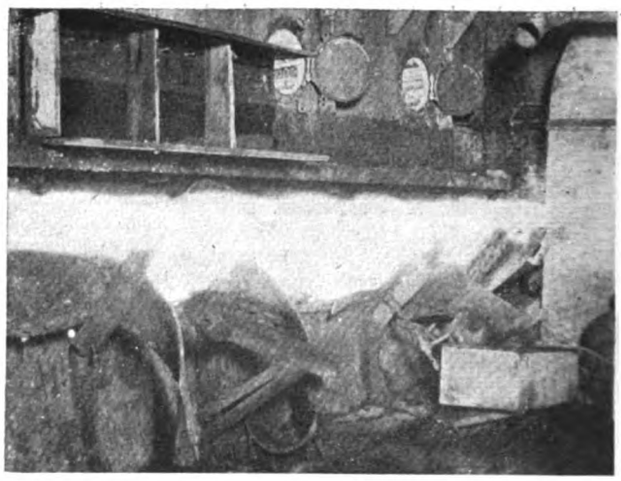
Throughout the entire steamer the confusion and cluttered condition were indescribable and the task of cleaning up presented an unusual problem for the job had to be done quickly and with thoroughness. In this connection it is interesting to note that thousands of pieces of dishware and crockery were found intact in the galleys while the storerooms yielded crates of oranges and other citrous fruits in a remarkable state of preservation due to the action of the salt mud. Apples, bananas and eggs stood up under the long submersion as well, but other foodstuffs were in an advanced state of decay so that the men who did the cleaning had to contend with stifling odors during the salvage work.

The 4-inch armored vacuum hose at work in the engine room

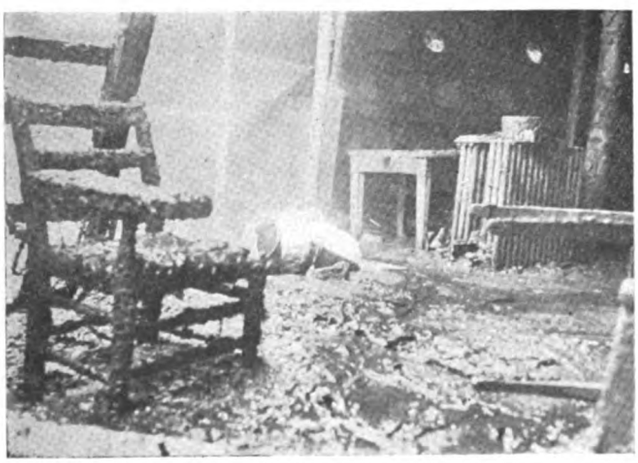
It was finally decided by the owners, the Morris and Cummings Company, and the repair yard engineers that the hand method of cleaning out the hull would be too costly



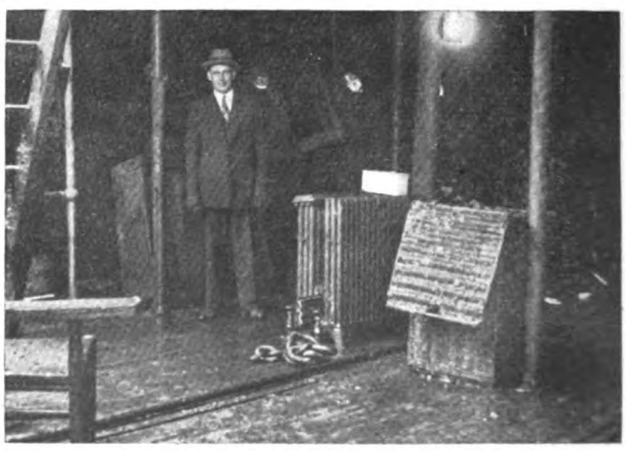
The service tug Salvager, showing pipe line and pressure tanks



View in the galley showing where the shell plating was torn apart in the collision



In the cafeteria forward before cleaning



View in the cafeteria after cleaning

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

and would not result in a satisfactorily thorough job. In the emergency the Salvage Process Corporation, New York, was given a contract for cleaning the vessel by means of the Wheeler system.

The work of cleaning the hull commenced on Wednesday, March 23, with a force of experienced men under the personal direction of L. W. Parker, marine manager of the Salvage Process Corporation. About 450 tons of slime and mud were taken out of the hull by means of the powerful pumps of the tug *Salvager*. This deposit was emptied into scows and dumped at sea. A 4-inch armored hose and special vacuum suction nozzle, of the same type utilized by the Wheeler system for cleaning oil tanks and bilges, were used. The work was kept going with few intermissions both day and night and was completed, except for a small amount of pick-up work, by April 3. At night flood lights fitted with 500-watt lamps were used for illumination.

MACHINERY IN GOOD CONDITION

The engine, boiler and fire rooms were particularly difficult problems because of the cramped conditions under which the work had to be carried on and because of the necessity of forcing a way into almost inaccessible corners. The machinery and boilers were found to be in excellent condition.

The galley was found to be 4 feet deep in mud and the stoves and ovens completely covered by huge drifts. This was largely due to the fact that the vessel was struck by the carfloat at this particular point where a gash was made in the hull on a line with the overhang more than 25 feet long by 3 feet wide, as shown in one of the illustrations.

Salt Detector for Boiler Feedwater

A SALT detector which acts as an automatic boiler salinometer has been fitted on a number of American ships with a high degree of operating satisfaction by Alexander McNab, consulting marine engineer, New York.

This device was developed to fill a need for a device other than laboratory equipment that would automatically give a continuous indication of the amount of salt in boiler feedwater in grains per gallon before it enters the boiler. The detector illustrated fulfils this function and also, in the event of a sudden increase in the salt content, which may occur due to a split condenser tube or to the evaporator priming, it gives warning immediately by an audible alarm and visually by the increased intensity of an electric lamp contained within the dome on the top of the instrument. This warning allows the defect to be remedied before the density of the water in the boiler increases perceptibly.

The principle upon which this detector operates is based on the well known fact that pure water has a high electrical resistance which, however, falls rapidly if certain compounds, of which ordinary salt is one, are added to the water. The essential part of the apparatus is a glass vessel fitted with two electrodes by which a current is passed through a sample of the feedwater which enters as shown in the illustration at the lower left side of the vessel and which overflows at the outlet on the right. The necessary current is taken from any convenient power or lighting circuit, direct current connecting to the cable shown on the right. The pet cock at the base of the glass vessel is for draining. The electrodes are made of a special grade of platinum iridio and are so arranged that no metal portion of the connections is in contact with the water. This is necessary in order to avoid excessive corrosion which would otherwise take place. The electrodes are adjustable so that the sensitiveness of the instrument may be varied. As noted above, the instrument gives a continuous indication of the saltness of the feed and this is accomplished by having a small supply of feedwater flowing through the glass vessel constantly.

The resistance of water falls rapidly for a small increase in the amount of salt present which tends to make the simplest arrangement too sensitive. To better this condition a resistance is introduced which is in the form of an incandescent 105-volt carbon lamp contained in a brass dome on top of the instrument. This lamp shows no light when the water is fresh but as soon as salt is present it begins to glow a dull red which gradually increases to full brightness

Salt detector

as the salt increases. This enables the engineer on watch to determine at a glance the condition of the feedwater and, if salt is present in too large quantities, to give the matter immediate attention. The meter card gives a quantitative indication of the amount of salt present in grains per gallon at 100 degrees F. A definite warning is also sounded by means of a bell immediately the salt exceeds a fixed percentage. This bell is operated by a relay connected in series with the instrument and may be adjusted to function at any desired density.

NILS F. NORD has opened an office as consulting engineer and marine surveyor at 74 Trinity Place, New York. Mr. Nord is a native of Sweden and a graduate of the Royal Danish Marine School. He has been engaged in ship and yacht building for about 20 years. From 1915 to 1918 he was owner of Limhamn Yacht Works, Limhamn, Sweden, and from 1917 to 1925 general manager of the Vestervik New Ship Yard, Vestervik, Sweden. Mr. Nord has also been manager of several steamship companies.

Mr. Nord has as his associate Mr. A. E. Overman who has been engaged in shipbuilding for the past 30 years. From 1917 to 1918 Mr. Overman was marine superintendent at the Pusey and Jones yard in Wilmington, Del., and in 1919 he was assistant superintendent at the Squantum, Mass., plant of the Bethlehem Shipbuilding Corporation.

Generated on 2024-09-12 12:34 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

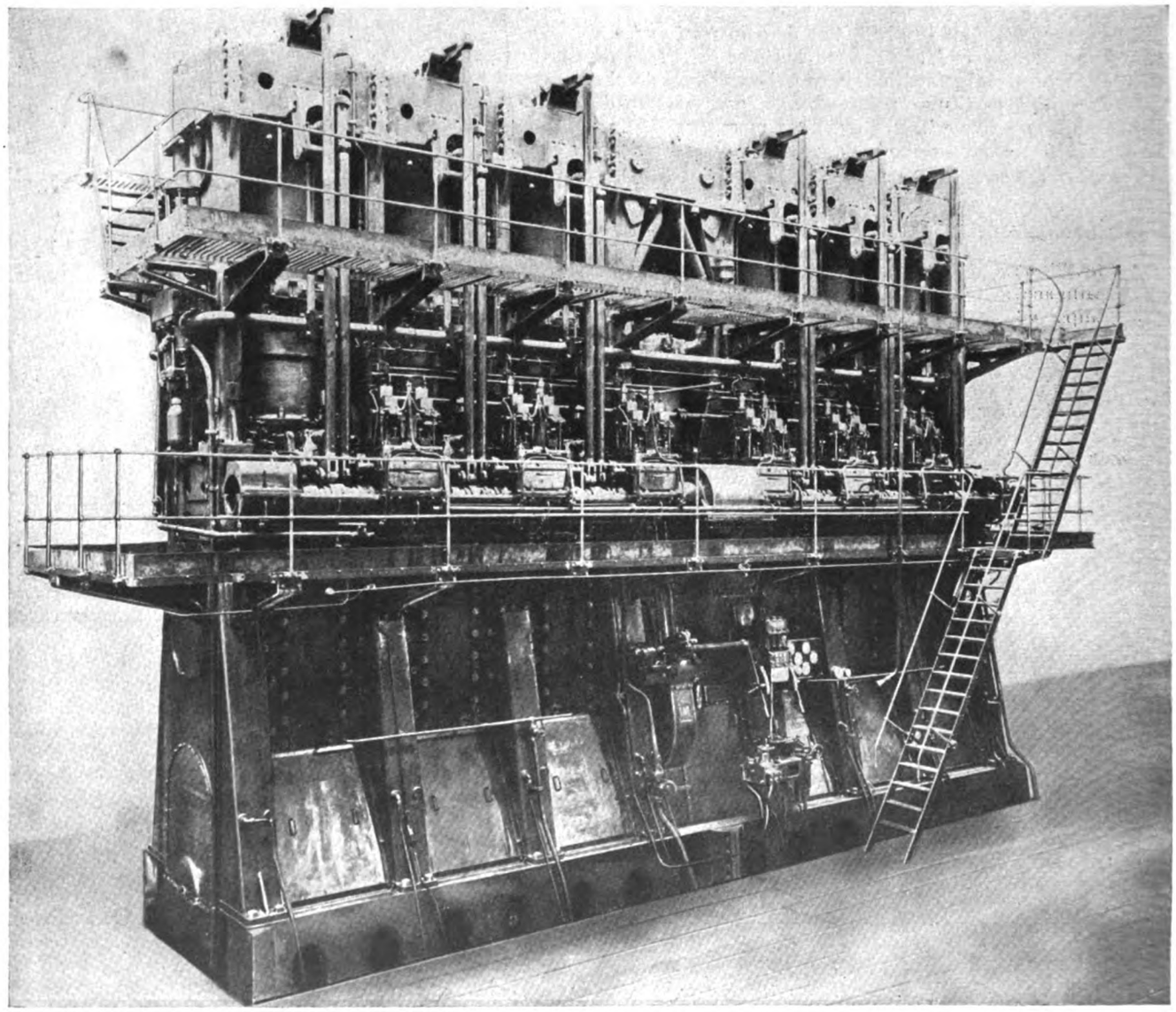
Diesel Engines for Rival Italian Liners

Propelling and auxiliary machinery of the two largest oil engined passenger ships in the world

By Our Special London Correspondent

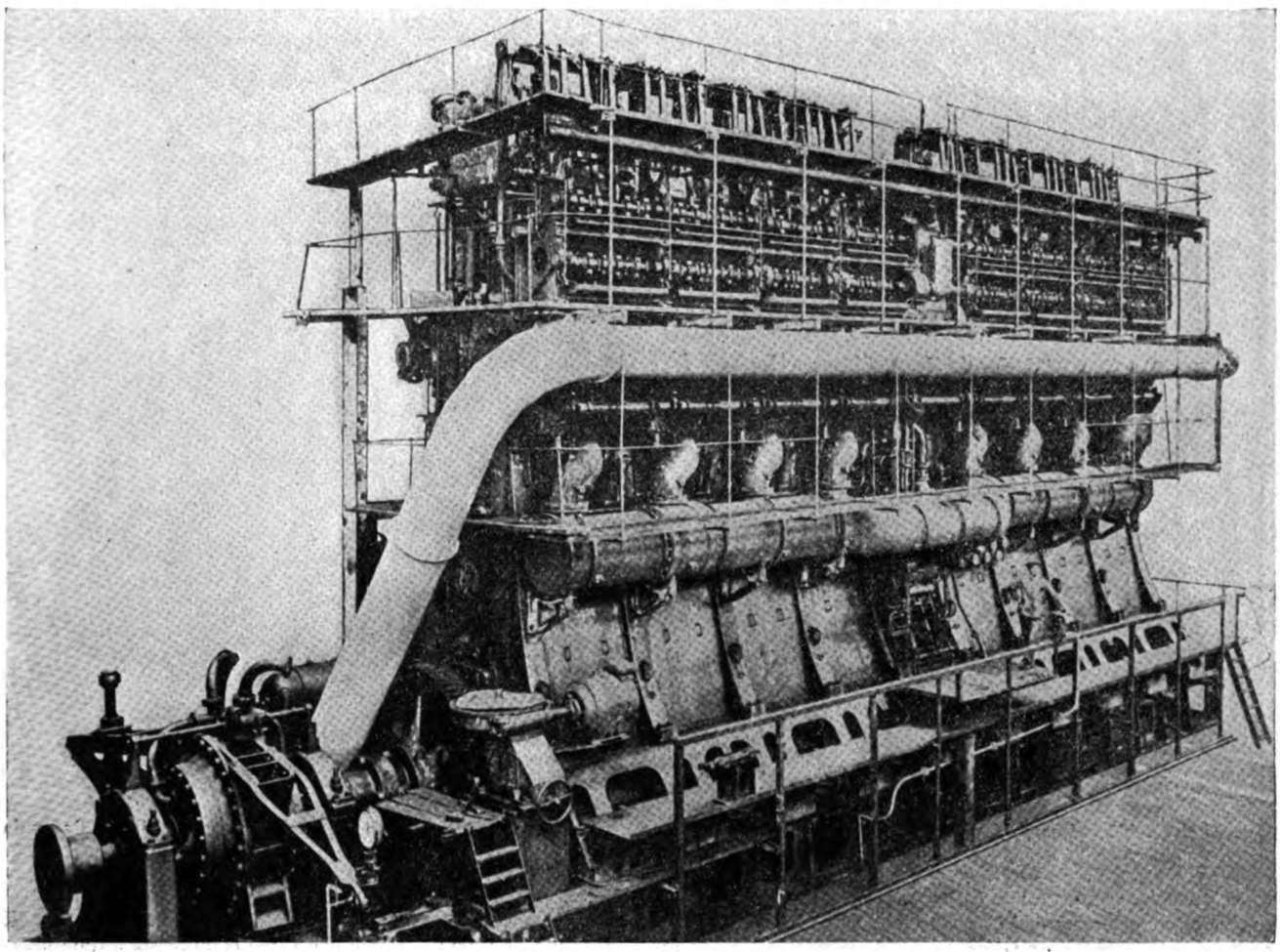
THERE is a good deal of interest and not a little excitement in the race for the completion of the two largest motor passenger vessels which are now being constructed. One is the *Augustus,* building at the Ansaldo Yard, Sestri Ponente, near Genoa, a vessel of about 32,000 tons gross for the Navigazione Generale Italiana. The second is the *Saturnia,* under construction at the Cantiere Navale Triestino, Monfalcone, near Trieste, a ship of about 23,500 to 24,000 tons gross for the Cosulich Line.

The owners are rival concerns, and the vessels are both to trade to South America. The *Saturnia* was launched as far back as December, 1925, while the *Augustus* took the water in December, 1926. Very rapid progress has, however, apparently been made with the machinery of the latter ship, and it is not improbable that both will sail on their maiden voyage about September or October. Piquancy is added to the situation from the fact that the *Saturnia* and *Augustus* are fitted respectively with the two leading rival types of double acting internal combustion machinery, the former having four cycle units of the Burmeister & Wain class, and the latter a two cycle plant of the M. A. N. design. Moreover, the *Saturnia* is a twin screw ship, while the *Augustus* has quadruple screw propulsion, and as much controversy has been raised in Europe concerning the respective merits of the two arrangements in large passenger liners, the performance of the ships from this standpoint



The standard M. A. N. double acting, two stroke Diesel engine (developing 6,250 brake horsepower at 120 revolutions per minute, or 7,000 brake horsepower at 125 revolutions per minute) as built for the 32,000-ton liner Augustus

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



One of two 10,000 brake horsepower four cycle double acting engines for installation in the Cosulich motor passenger liner Saturnia

will also attract the closest attention among engineers, shipowners and shipbuilders.

QUADRUPLE MACHINERY OF 28,000 SHAFT HORSEPOWER

It so happens that the test bed trials of the first of the engines for each of these liners have been carried out a short time ago, almost simultaneously. It is of some interest to give particulars of the respective motors, differing as they do so completely in essential features of design and arrangement. Dealing first with the *Augustus* as the larger craft, her four engines, built mainly by the Maschinenfabrik Augsburg Nürnberg in Germany, but partly by their licensees, the Cantieri Officine Savoia, near Genoa, are each designed to develop normally 6,250 brake horsepower when they are running 120 revolutions per minute.

This engine is, perhaps, more completely standardized than any Diesel motor of large size, for there are three or four ships in service with M. A. N. double acting Diesel motors and about 20 engines of the same class on order. All of these, including the machinery for the *Augustus*, have cylinder dimensions of exactly the same size, namely, a cylinder bore of 700 millimeters and a piston stroke of 1,200 millimeters but varied powers are developed according to the number of cylinders used and the speed of revolution. In the case of the *Augustus* the speed is 120 revolutions per minute, but in many of the cargo ships it is as low as 80 to 85 revolutions per minute. The specification for the new liner calls for each engine to develop 7,000 brake horsepower for two days continuously when running at 125 revolutions per minute so that, when occasion arises, the total power can be increased to 28,000 shaft horsepower.

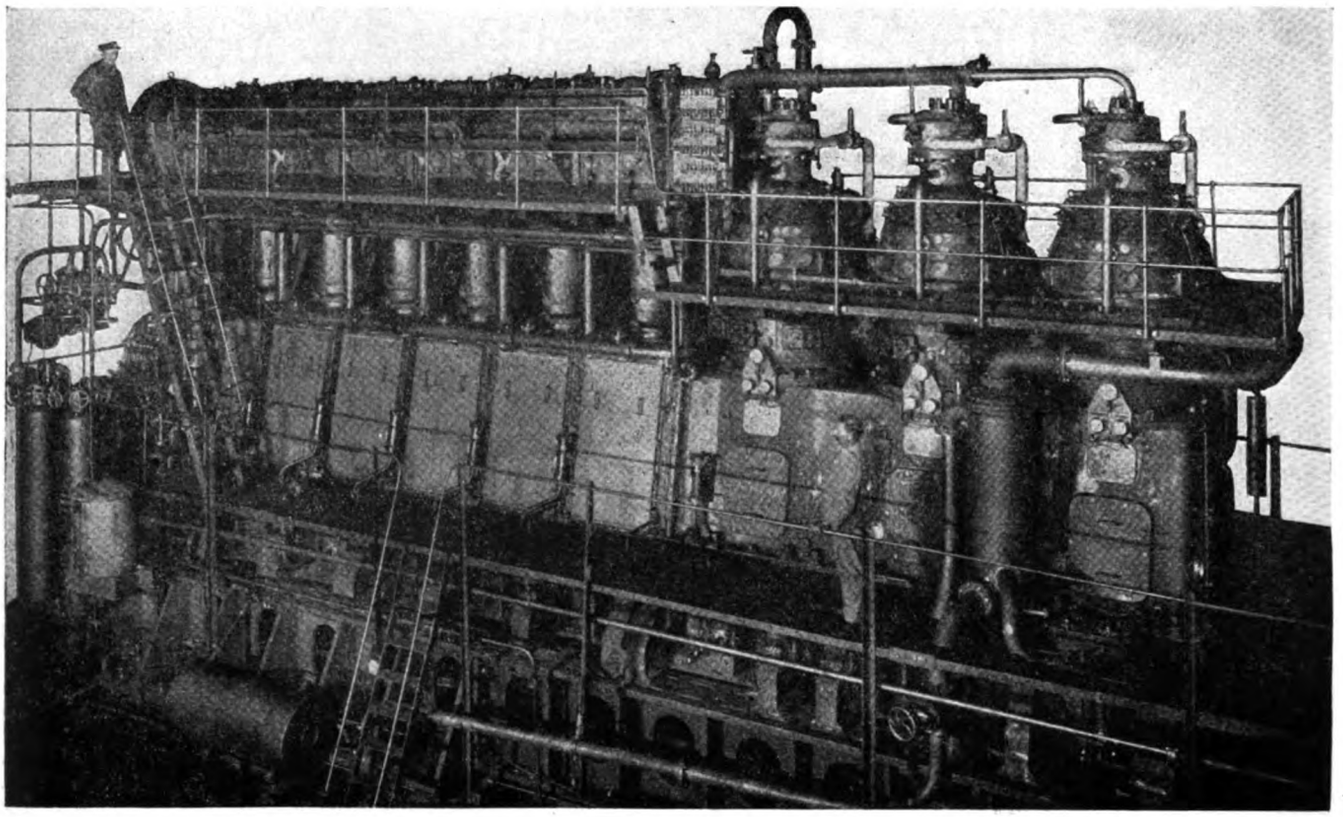
It is not proposed to describe the engine in detail, for it is similar in general design to the motors of this class built in the United States by the New London Ship & Engine Company and by the Hooven, Owens, Rentschler Company. In the upper cylinder cover there is only one valve, that for the admission of fuel, and this is vertically disposed. The air starting valve at the top is horizontal and admits air at the upper part of the cylinder.

At the bottom are four fuel valves symmetrically disposed, in addition to a starting valve, and all of these valves, both for the top and the lower portion of the cylinder, are actuated from a common horizontal cam shaft which is driven in a normal manner by gearing from the crank shaft. The lower valves are opened and closed by short levers and the upper valves through comparatively long vertical push rods. There are four rows of ports in the center, two for the admission of scavenging air and two for the discharge of the exhaust gases.

The scavenging air is supplied from turbo blowers, of which there are three in all, two for continuous operation and one as a standby. Their size may be gaged from the fact that each is driven by an electric motor of about 900 brake horsepower running at from 1,800 to 2,500 revolutions per minute. Their capacity is about 65,000 cubic feet per minute and the pressure at which the air is supplied is between 1½ and 2¼ pounds per square inch.

It need hardly be remarked that the auxiliary machinery on the *Augustus* is almost exclusively electrical. It is some-

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



One of the 1,800 indicated horsepower Diesel engine driven compressors installed in the 23,500-ton motor liner Saturnia

what surprising to find eight generators in the auxiliary engine room, each coupled to a Diesel engine. Three of these, each of 425 shaft horsepower with dynamos of 280 kilowatts, are set aside solely for the supply of current to the scavenging blowers. The other five comprise 900 brake horsepower, four cycle single acting engines driving 600-kilowatt dynamos.

THE MACHINERY OF THE SATURNIA

The *Saturnia* is a smaller ship than the Augustus and the speed will, it is understood, be in the neighborhood of 19 knots, against nearly 21 knots of the other vessel. The power needed on the *Saturnia* is, therefore, substantially lower, and a maximum output of 20,000 shaft horsepower was demanded. It is probable, however, that for the greater part of her service, not more than 18,000 shaft horsepower will be required, and the designers therefore decided to adopt a standard type of Burmeister & Wain double acting four stroke engine as fitted on the *Gripsholm* and *Asturias* but to employ supercharging for the first time on such plant in order to add some 8 or 10 percent to the power that would have been developed with unsupercharged machinery.

There are thus two eight cylinder motors with a bore of 33 inches and a piston stroke of 59 inches, the speed, to attain the full power, being in the neighborhood of 125 revolutions per minute. The compressors required for the injection of fuel are driven by separate Diesel engines (thus following the plan of the pioneer liner *Gripsholm*) but apart from these characteristics, the engine may be considered as standard. There is a common inlet pipe for the air supply to the lower part of the cylinders and another for the upper portion, so that air can be delivered either from the supercharging blowers or drawn in direct from the atmosphere according to circumstances.

The auxiliary machinery on the *Saturnia* is, perhaps, of even more interest than the propelling plant, on account of the large compressors which are needed. A separate auxiliary room is, of course, provided, as is customary on all large motor liners. There are three compressors (one serving as a standby) and two of these are driven by Diesel engines of the six cylinder, four cycle, single acting type with an output of about 1,800 indicated horsepower at 180 revolutions per minute. Although the motors are of Burmeister & Wain design, they, together with the compressors themselves, were built by the A. E. G. in Berlin. They are trunk piston machines and the compressor in each instance comprises a triple unit, each unit having low, intermediate and high pressure stages, and delivering air at 1,000 pounds per square inch. The capacity is in the neighborhood of 200,000 cubic feet of free air per minute.

In addition to the two large compressors, there is another with two compressor units instead of three, and driven by a four cylinder Diesel engine of about 1,300 horsepower. All of the engines in question are of the trunk piston type—of somewhat large size to employ this principle, which is, however, gaining in favor in certain directions among the engine builders in Europe.

A marked difference in the arrangement of the auxiliary generating plant is to be seen in the *Saturnia* as compared with the *Augustus* which, as previously mentioned, had eight Diesel driven dynamos. In the *Saturnia* there are only three, but they are of much greater size, two comprising 1,800 indicated horsepower Diesel engines driving 900-kilowatt dynamos at about 200 revolutions per minute and the third a 900 horsepower three cylinder engine driving a 450-kilowatt dynamo.

With all these points of difference between the two largest motor liners in the world, it is natural that their completion should be awaited, not only in Italy but in all shipping circles in Europe, with the greatest interest. The *Augustus* has a length between perpendiculars of 665 feet with a beam of 82 feet 6 inches, while the *Saturnia* is 631 feet in length with a beam of 79 feet 6 inches.

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Small Power High Speed Diesel Engines

Four and six cylinder Hill Diesel engines developed for yachts, tug boat and work boat service

WITH the constantly widening demand for Diesel engines of higher speed, greater flexibility and less weight both in the industrial and marine fields, a number of new Diesel engines have been designed to meet these requirements. In the marine field particularly, Diesel power is gaining rapidly in favor for the propulsion of medium and small yachts, tug boats, work boats and the like where it is necessary to conserve weight and space to a high degree.

The Hill-Diesel Company, Lansing, Mich., manufacturers for twenty-seven years of internal combustion engines, have brought out a new "6 x 10" 4 stroke cycle Diesel engine having characteristics particularly suited to service of this character. The new "6 x 10" model is built in 4 and 6 cylinders having a rating of 50 to 75 horsepower in the smaller engine and 80 to 125 horsepower in the 6-cylinder size. As indicated by the model designation, the cylinders have a diameter of 6 inches and a stroke of 10 inches. The specification details give the diameter of the crank shaft as 4 inches; the diameter of the crank pins, 4 inches; the cooling pump suction, 1 inch; the cooling water discharge, 1¼ inches; diameter of inlet valves 2⅜ inches; diameter of exhaust valves, 3⅛ inches; number of piston rings 5; width of piston rings, ¼ inch. The range of speeds is from 200 to 900 revolutions per minute, changes being made by hand lever which alters the governor setting, leaving the governor at all times in full control of the regulation. The engine is of the solid injection type and operates on all standard Diesel fuel oils.

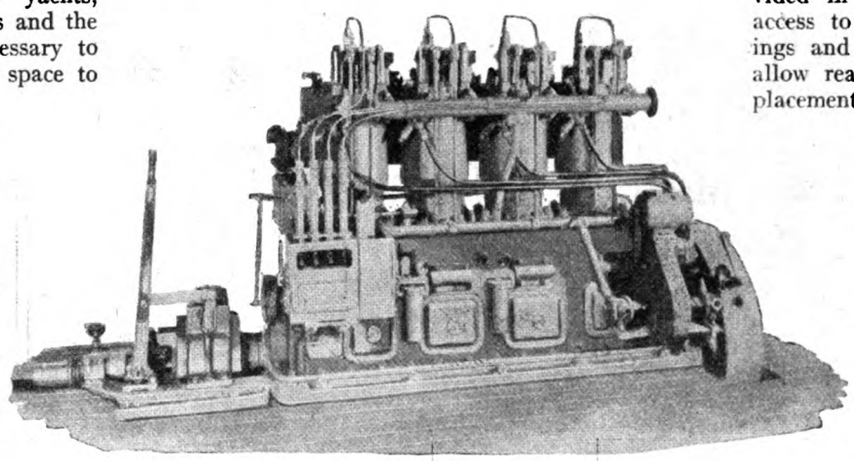


Fig. 1.—Four-cylinder marine type Hill Diesel engine

As will be noted in Fig. 1, the engine is designed to practically enclose all working parts requiring constant lubrication, but all other parts, especially those requiring inspection, are easily accessible. Large openings are provided in the base to permit access to the principal bearings and these openings also allow ready removal and replacement of the pistons. The main and crank bearings, which are bronze back, babbitt lined, may also be rolled out through these ports for inspection or replacement. Connecting rods are of the marine type 2¼ times the length of the stroke. The new model employs completely water jacketed pre-combustion chambers into which the fuel is sprayed in a finely divided state. Ignition occurs in this space and combustion is carried far enough to increase the pressure above the compression pressure and project the resulting gas into the cylinder with great force in a highly combustible state where combustion is completed. The flow of gas from this chamber to the cylinder is through a series of three 5/32-inch diameter holes so that the danger of plugging, due to overload or poor fuel, is reduced to a minimum.

The fuel nozzle is of the low pressure type employing a spiral and a large final orifice to break up the fuel instead of the minute holes generally used. A substantial filter is provided to protect these nozzles from dirt. The

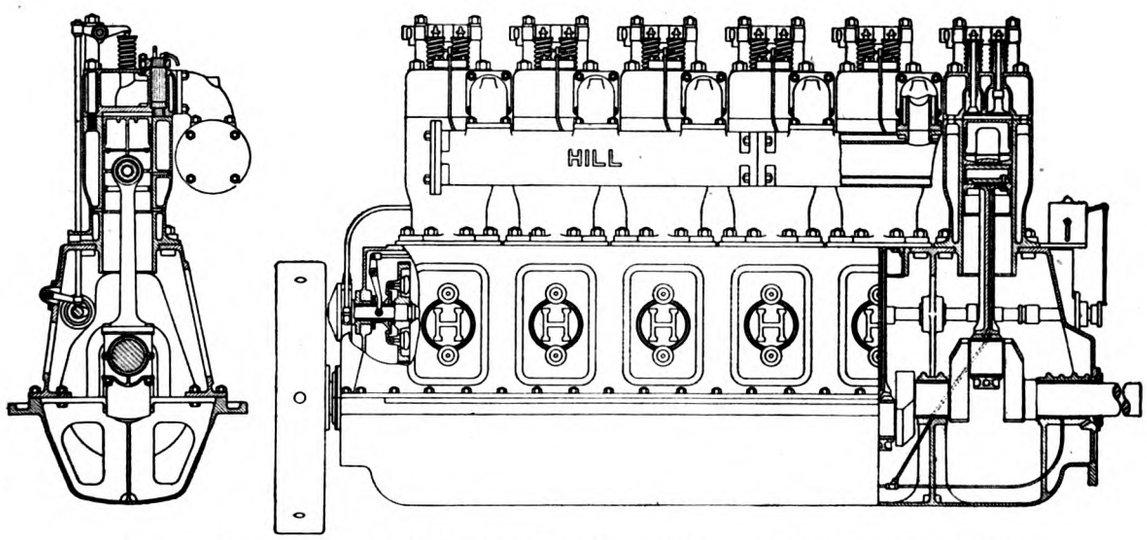


Fig. 2.—Six-cylinder model Hill Diesel engine showing sections through cylinders

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

complete fuel valve may be removed while the engine is running. The fuel is injected during the compression stroke, the time depending upon the nature of the fuel and speed of the engine. Under full load the fuel consumption is about 0.55 pound per horsepower hour.

Water Jacketed Exhaust Manifold

Among other features of the engine are a completely water jacketed exhaust manifold through which the discharge from the cylinder jackets is carried. Openings for thermocouples and inspection plugs are provided in the exhaust outlets. The exhaust valve levers are mounted on eccentrics provided with lever handles so that the compression may be relieved on one or more cylinders when necessary. The air starting distributor is driven from an extension of the cam shaft and supplies air to all cylinders. The air starting check valve, cylinder pressure relief valve and indicator connection are combined in a single unit secured to the cylinder head by studs. This unit may readily be removed for grinding when necessary. Full forced feed lubrication is provided for all the principal bearings through drilled channels in the crank and tubes in the connecting rods. A rotary oil pressure pump draws oil from the storage tank and discharges through a filter to the distributing header within the base. A second rotary pump keeps the base drained of oil and discharges it into the oil storage tank. On marine installations a bronze rotary pump provides circulating water while another handles bilge water. These pumps are interchangeable. Provision is made for a fuel transfer pump when required.

The injection pumps shown in section in Fig. 6 are of conventional design with hardened steel cylinders and lapped plungers operated by a hardened steel cam shaft. Large size, hardened steel rollers mounted on swinging levers transmit the movement to the plungers. The output is controlled by graduating the stroke through the levers and an eccentric shaft. The pump is so designed that a complete cylinder with its valve and plunger may be removed and replaced while the engine is running. The maximum pressure under which the pumps operate does not exceed 1,000 pounds.

A fly ball governor is mounted in the secondary gear. Between the governor and the fuel pumps an oil pressure operated regulator is interposed by means of which the slightest movement of the governor is multiplied several times and the power increased as much as necessary to move the control eccentric on the pumps. This regulator power device permits the use of a light sensitive governor and ensures instant piston response by the pumps to great or small changes of engine load or speed.

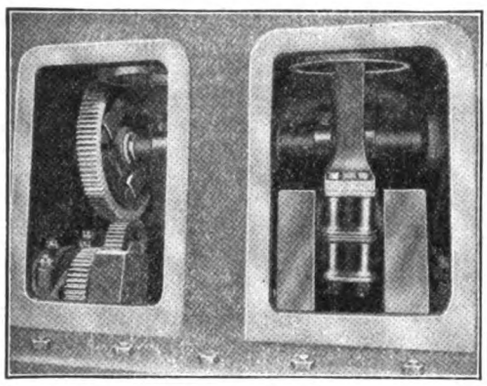


Fig. 3.—Large openings permit access to principal bearings

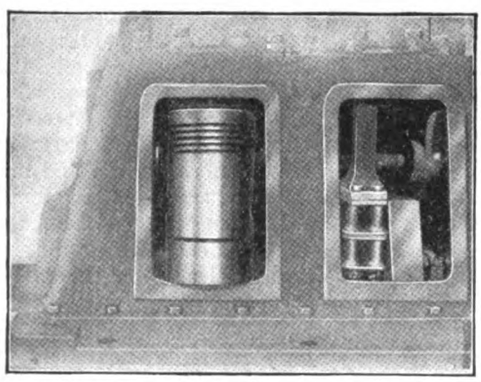


Fig. 4.—Ports in engine base permit removal of pistons

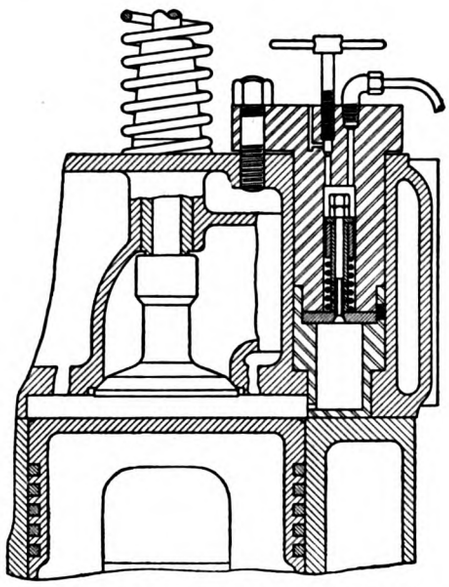


Fig. 5.—Section through cylinder head

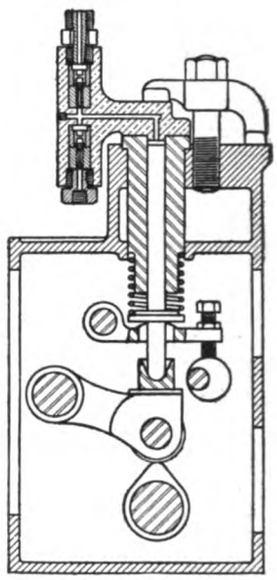


Fig. 6.—Section through fuel injection pump

Air Cooled Arc Welder

THE New Monarch Machine and Stamping Company, Des Moines, Ia., has perfected an air cooled alternating current welding machine designed to weld steel and cast iron and built for both light and heavy duty. This machine was invented after a number of years of experiment by Ralph and Earle Brummett of Des Moines. The machine is entirely self-cooling and it is claimed that it cannot be overheated by constant operation. A special feature of this welder is the economy of operation, the cost being only about 15 cents an hour. The Monarch welder is made in a 1½-kilowatt size operating on 110- and 220-volt power circuits and having an adjustable amperage of 20 to 170. Because of this adjustable feature, the welder, which is primarily a heavy duty machine, is also adapted to lighter types of work since the amperage may be increased or diminished at the operator's will. It was built primarily to fill the needs of quantity production in iron and steel manufacturing.

The Bird-Archer Company has moved its offices to the fourteenth floor of the Corn Exchange Bank Building, 1 East 42nd street, New York City.

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

The Practical Analysis of Merchant Ship Trials and Service Performance—II*

By E. V. Telfer

WE have commented upon the general lack of appreciation of the scientific value of ballast trials. From the usual standpoint of speed-power correlation, this outlook is both understandable and excusable. Viewed, however, in the light of the methods of this paper, and principally from the standpoint of the calibration of the propeller as a power absorption dynamometer, the ballast trial becomes of value.

Ballast Trials and Their Definite Use

Let us presume first of all that we have sufficient information of a particular ship or type of ship to be reasonably certain of the frictional mean referred pressure. We can then carry out not only our speed-revolutions correlation, but also the mean-referred-pressure correlation and determine the average mean pressure line and the average apparent slip to which it corresponds. This information gives us the calibration of the propeller as a power dynamometer for a certain degree of immersion of the propeller. The precise degree of static immersion should therefore be noted with the trial data as represented first by the draft aft, and second by the percentage of the propeller diameter immersed.

Of itself this investigation is of restricted value and application. When, however, it can be jointly considered in conjunction with a generalized power diagram for the loaded condition its use becomes more general and evident. Thus if we consider the load mean-pressure line corresponding to the same apparent slip as that found on the ballast trial, the ratio of the brake-mean-pressure ordinates of the respective ballast and load lines can be taken to represent the power absorption ratio of the partially immersed propeller, the power absorption reduction being due first to the partial immersion and, secondly, to the increased inflow velocity due to a smaller wake. For practical convenience, however (in steam reciprocating engines), it is preferable to refer this ratio to indicated horsepower, and so long as the value of the ratio is based upon that given by the higher and customary range of revolutions in the ballast conditions no great error will be involved by the simplification. Further, it must be remembered that all we are attempting to do in this correlation is find the variation in the power absorbed by a particular propeller behind a particular ship as the draft aft is varied.

Analysis of a number of vessels convinces the author that this type of investigation does lead to satisfactory results. A particularly interesting case was recently examined. For two sister ships for which a generalized power diagram was prepared from service data, ballast trial data each at considerably different drafts aft were available. In addition, two carefully taken service indicator cards at further drafts aft were also available. The absorption ratio at each of these ballast drafts covered by the data was determined, and the results are shown in Fig. 6 to a double base of draft and relative immersion of propeller. On the same diagram the results of tests on a model propeller with varying immersion are also given. In the first place, there seems to be no doubt that the spots obtained from the ballast performance are mutually consistent. The actual absorption ratios behind the ship are greater than those of the isolated model screw at the higher immersions, and the reverse appears to be the case at the lower immersions. This difference is apparently definitely in agreement with the fact that the intensity of wake decreases with draft, since such a variation would explain the different trend of the two absorption ratio curves.

The foregoing remarks on ballast trials also apply to the quay trial. For example, were this trial carried out with the propeller entirely immersed, the power-revolutions correlation so found would be of considerable value in checking the slope of the constant revolutions lines in our generalized power diagram. The powers obtained at each

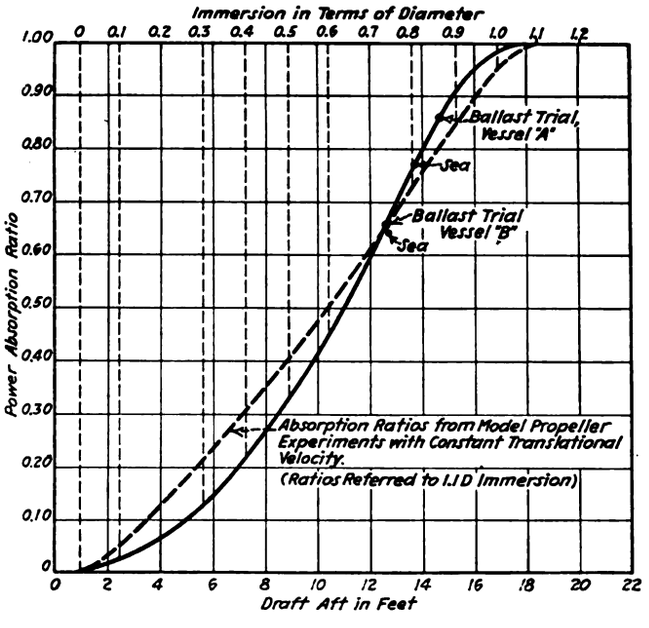


Fig. 6

revolutions could be laid off along the zero speed ordinate of the power diagram and the revolutions lines made to run in continuously to their corresponding quay trial powers.

The Power Diagram and Ship-Model Correlation

Attention has been drawn to the fact that any speed-power correlation attempted as a result of a load trial performance must inevitably be accidental rather than fundamental. It follows, therefore, that considerable hazard must exist when the correlation of a model performance, which has just claim to being fundamental, with a load-trial speed-power performance is attempted. If, however, the load-trial data are converted into the fundamental form represented by our power diagram, correlation can be justifiably proceeded with.

While we have in this paper restricted our attention to the indicated power diagram, similar diagrams can be also constructed for brake or shaft horsepower and thrust, when these latter are measured on the ship. In the former case the mean-referred-pressure diagram becomes the torque diagram. The mean torque when finally determined should intersect the zero revolutions ordinate with a very slight positive torque. Trial data which do not satisfy this con-

* From a paper read before the North East Coast Institution of Engineers and Shipbuilders.

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

dition cannot be accepted as valid for the model correlation.

This subject of ship-model correlation, however, is somewhat outside the scope of the present paper since the author realizes that so much requires to be done in the better understanding of the ship before the practitioner can justifiably discuss model work.

THE POWER DIAGRAM AND SERVICE DATA

The first part of this paper has been devoted to the study of commercial trials from the one standpoint of making the information general rather than restricted. It is generally advanced that load-trial weather performance is no indication of what a ship will do in service; and while this view is perfectly true, it overlooks the very important fact that *what the ship has done in service can be measured by the data taken on the load trial,* provided these data are presented in the form of the generalized power diagram herein recommended.

Thus, once we have this diagram available, the question of determining the most elusive unknown in a vessel's sea performance, average power, reduces to a simple reading of the diagram. Knowing the average revolutions on a particular passage as registered by revolutions counter and in addition, the speed averaged by the ship, we can at once read off from the power diagram the corresponding average power. *The diagram will hold good for all weathers, and practically all usual conditions of hull surface, provided, of course, that the propeller remains unchanged.* Since the average revolutions per minute are known with extreme accuracy, and further, since considerable errors in ship speed do not materially affect the average power given by the diagram, the potentialities of the diagram to the shipowner and his technical advisers can hardly be questioned.

As an indication of the accuracy of the diagram, one particular case may be mentioned. For this vessel, a load trial was carried out and from the data obtained, a power diagram was prepared. The vessel in service has been kept under close observation; and the chief engineer has been returning progressively the usual service indicator cards. These cards are known to have been taken with considerable care. Altogether, some 20 or so cards have been returned for loaded passages. Using the power diagram to predict the power from the revolutions and ship-speed given on each card and adding up all card and diagram powers to determine the respective averages, the difference between the two sets of figures was found to be the (apparently) absurd value of less than ½ percent. This instance is by no means isolated; in fact, the author can confidently state that in all vessels at present under his continuous observation *and for which the engineer's cards pass the usual tests for probable accuracy,* the same somewhat astonishing agreement is found. To effect this agreement it is obviously essential that in addition to the ship's indicator being accurate as an instrument (*i.e.,* has no definite error either way), the engineer must specify the precise conditions (revolutions and ship speed) under which the cards were taken.

The difference between maximum power and true average power is perhaps not generally appreciated. For example, an engine which at top steam, and set to, say, 63 revolutions per minute developing a power of 1,865, will at the same slip and 61.5 revolutions per minute, the average for the day, only develop 1,740 indicated horsepower. This is 6.7 percent less than the maximum. It frequently happens, however, that the average revolutions are fully four less than the maximum. In this case the power drops to 1,550, *i.e.,* fully 17 percent less than the maximum. Under these conditions there is thus considerable scope for errors in the analysis of ship service performance.

After a careful study of the whole problem, the author has thus definitely come to the conclusion that the power diagram offers at present the only available and reliable practical means, within his experience, of determining true average power. Relatively few ships, however, are fortunate enough to have had a load trial. With copious service data, this omission can nevertheless be easily remedied. What we require is as many reliable indicator cards as possible giving *power and revolutions at top steam and average slip for the day.* From these cards the average of all mean referred pressures, of all apparent slips, and the root mean square of all revolutions should be calculated. Next, by assuming from experience the maximum value of mean referred pressure associated with the particular boiler pressure, we can determine for an assumed mechanical and transmission efficiency product the value of the constant frictional mean referred pressure. We can thus draw in our basis mean pressure line and generalize it precisely as was done for load-trial data.

It would thus be a relatively simple matter to prepare a power diagram for any ship and thus make possible the general determination of average power. So far as the load power diagram is concerned, however, at least 20 reliable service cards should be averaged before attempting its preparation.

The ability to determine average power at sea with some claim to accuracy enables the analysis of service performance to be really scientifically attacked.

THE ANALYSIS OF SERVICE PERFORMANCE

The raw material for service performance analysis is obviously the engineer's and deck abstract of logs. The type of information called for on these abstracts varies with every shipowner and superintendent engineer. Whatever other information is requested, the following basis daily information is essential:

Engineer's Abstract.—Total revolutions, hours in day, observed and logged distances noon to noon, fuel consumption and, in the case of coal-burning ships, total weight of ash discharged. In addition, the respective leaving and arrival drafts (salt or fresh water) should be noted; and finally, an accurate description of the weather.

Deck Abstract.—This will include some of the information already given in the engineer's abstract. However, the description of weather, strength and direction of wind, latitude and longitude, and amount and nature of deadweight carried should at least be given.

The engineer's abstract, in addition to accommodating the above-mentioned basis information, should also have columns in which the engineer can enter such consequent information as average daily revolutions per minute, daily engine distance average daily log and observed speeds and their corresponding apparent slips. Finally, a column should be provided in which a daily entry of bunkers consumed to date can be entered. It is most convenient if each abstract is made to refer to one trip, *i.e.,* port to port; total time, distances and revolutions and fuel consumption similarly from full speed to pilot to pilot. The average statistics, for each completed passage, should be calculated from the totals of the basis observations and not taken as the average of the daily averages.

The daily statistics of a vessel's performance can be considered in many ways. They can be considered passage by passage and voyage by voyage. This is probably the most usual practice; but from the point of view of securing data which are of any use for the appreciation and comparison of ship performance, the system, as usually worked, is practically useless since only after the statistics of a number of years are available do the significant averages deduced from these statistics settle down. To wait for years before coming to any valid decision on the merits of a particular vessel's performance is an impossible state of affairs. The result is that interim decisions are made which, because of inevitable odds, are more likely to be wrong than right.

Generated on 2024-09-12 12:31 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Let us now return to the question of service performance as a scientific problem. We are faced with the study and the correlation of literally a huge number of observations of coal and speed, subject broadly to two distinct types of fluctuation, the avoidable and the unavoidable. The avoidable fluctuation is the variation in coal consumption to maintain a given average horsepower. If this fluctuation can be eliminated from the problem, not only can the engine performance be separated from that of the ship, but the range of the total fluctuation is now considerably reduced. Our power diagram, therefore, is of valuable application in this connection.

Consider now the remaining fluctuations. In attempting to average all power-speed statistics, we are overlooking the fact that the observations are definitely heterogeneous. If the weather on any two days is definitely logged as different, the resulting difference in the two respective power-speed data is fundamental, and cannot therefore be regarded as merely a fluctuation about some definite mean value. This fact leads us inevitably to the consideration of the necessity for some sort of weather classification. Consider, for example, the four-grade classification, fine, moderate, heavy, and very heavy. An objection will at once be raised as to the means adopted of ensuring the correct classification of each and every observation. As the judgment of the ship's officers is practically the only means available, it may be argued that a method based upon their judgment cannot lead to any satisfactory result. Such an argument, however, overlooks one important point. Once the observations have been classified according to the officers' judgment of weather, the observations in each weather class are freed from the tremendous fluctuation which existed prior to the adoption of the weather classification. In considering each class of weather, the majority of the observations will lie clearly in the particular class. It follows, therefore, that if the observations in each class are averaged, the process is likely to be much more scientifically valid than would be the case were no weather classification adopted.

Let us now consider the process of service analysis with this four-grade classification. The passage should first be classified according to the deck opinion of the weather. This opinion should then be reviewed in the light of the actual deck returns of wind direction and strength. Finally, the engineer's opinion should be referred to in cases of doubt where, for example, the apparent slip (the effect) based on both log and observed speeds does not appear to be in harmony with the weather (the cause). Next, the performance in each class should be considered separately. For each day the average revolutions per minute, the average log and observed speeds, and, finally, the bunkers burned to date, should be tabulated. From these data the corresponding averages for each weather class should be calculated.

By referring now to the power diagram for the particular ship, we can read off from the average revolutions line, and joint consideration of observed and log speeds, the corresponding average power in each class. In the majority of cases the log and observed speeds will be in sufficiently close agreement as to leave no doubt as to the average power. In other cases it is advisable to use the mean of the two speeds in determining the power. In any case, however, only observed speed average should be used for the final presentation of speed performance.

Next, from the initial and final draft and deadweight particulars for the passage, the departure displacement, should be calculated. By then subtracting the mean total quantity of bunkers burned during each weather class from the total displacement, the mean displacement for each class can be obtained. Finally, we can correlate the three averages, speed, power and displacement, by calculating the corresponding value of the Admiralty constant.

Progressively, with the analysis of weather class performance the analysis of passage average performance should be carried out. From passage averages we can pass on to voyage averages, and here again, of course, voyage totals must be used in determining the averages. The simple average of passage averages does not give the voyage average owing to the generally considerably different time-duration of each passage.

Consider now the position of our analysis when the statistics for one voyage have been examined. For each passage we have the totals of the daily average revolutions, speeds and bunkers burned in each weather class. We can therefore determine the total number of days throughout one voyage comprising several passages in the respective weather classes; and from our class totals we can finally determine the class average Admiralty constants. These class averages based upon the greatest number of statistics have considerable claim to accuracy. The voyage, passage, and class average Admiralty constants are all, of course, fundamentally related. Thus, for example, we know for the whole voyage the weather frequency percentages, *i.e.*, the percentage days respectively fine, moderate, heavy, and very heavy. If, therefore, we take each class Admiralty constant and multiply it by its corresponding weather percentage, the product represents the contribution to the voyage average Admiralty constant made by the performance data corresponding to the particular weather class. If we total these products the sum should equal the voyage Admiralty constant. Similarly, the application of this method to the results of each passage enables the passage Admiralty constant to be checked against the weather class constants and frequencies.

When the various weather class Admiralty constants have been derived from the results of a year's statistics (which are fully ample) it is generally found for each ship that the constants differ in each class by an approximately constant amount, which in full merchant ships appears to average about 60. Thus good average values for the various weather class Admiralty constants for the case of a vessel having a fine Admiralty constant of 280 would be moderate 220, heavy 160, and very heavy 100.

Now imagine this vessel to have experienced in her first year's trading, weather 40 percent fine, 30 percent moderate, 20 percent heavy, and 10 percent very heavy. Her average Admiralty constant in all weathers is thus given by

$$\begin{aligned} &0.40\ (280) + 0.30\ (220) + 0.20\ (160) + 0.10\ (100) \\ = \quad &112 + 66 + 32 + 10 \\ = \ &220 \end{aligned}$$

or in other words 21½ percent below her best in fine weather.

This example leads us to consider the possibilities of our method to the prediction of sea speed. Consider the case of two owners, working very different trades, using the same form of ship. If the builders can persuade each owner to examine his logs and give him the average respective weather frequency over a period of years on the trade for which the vessel is intended, the question of powering and sea speed reduces to a very simple process. Thus if the first owner engaged in heavy weather trades gives the builder the weather frequency, 15, 35, 30 and 20, the average Admiralty constant of the builder's model will be (from the case previously examined):

$$0.15\ (280) + 0.35\ (220) + 0.30\ (160) + 0.20\ (100) = 187$$

On the other hand, if the owner specifies a weather frequency 55, 25, 15 and 5, the corresponding average constant will be given by:

$$0.55\ (280) + 0.25\ (200) + 0.15\ (160) + 0.05\ (100) = 238,$$

or about 21 percent better than the vessel in the heavy trades.

Generated on 2024-09-12 12:34 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

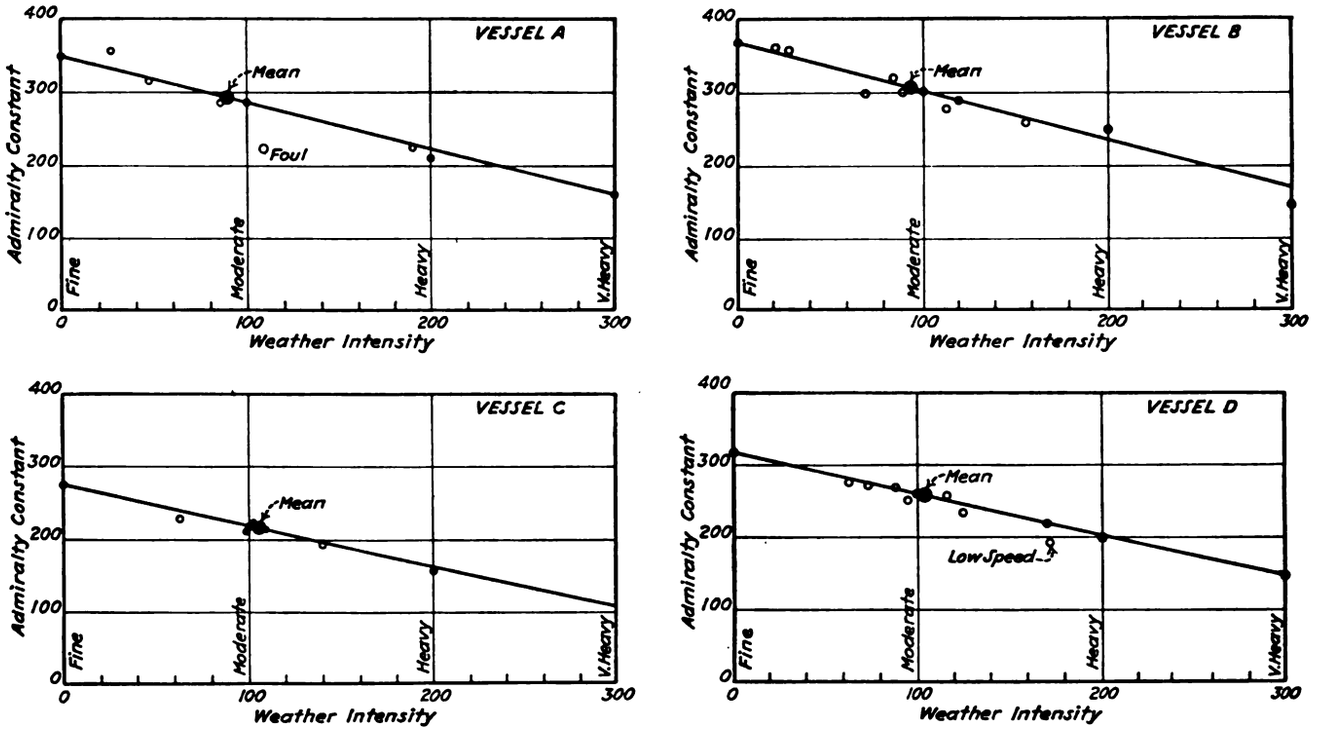


Fig. 7

These constants can be used to power the respective vessels for the sea speed specified.

Once the general features of the complete analysis are clearly understood, there will be found several deductions which follow and considerably simplify the question of securing an accurate appreciation of sea performance and the simultaneous influence of weather. We have already mentioned that the difference between the Admiralty constants of the various weather classes is approximately constant. This applies to our four-grade classification. If, on the other hand, a three-grade classification is adopted, this constancy will still hold good. The three-grade classification Admiralty constants will be derived from those of the fourth grade by taking the first means of the successive constants. Thus with 280, 220, 160 and 100 four-grade, we will have 250, 190 and 130 three-grade, the difference between successive constants being the same as with the fourth grade.

Accepting this assumption of constant loss difference, the problem simplifies in a very interesting manner. Adhering to our four-grade classification we see that the loss in Admiralty constant on the heavy days is twice that on the moderate, while on the very heavy days it is three times the moderate. Thus if instead of considering a particular four-grade classification such as 25:40:25:10, we double the heavy percentage and treble the very heavy and add these quantities to the moderate percentage, *i.e.*:

$$40 + 2(25) + 3(10) = 120$$

we obtain a number which multiplied by the constant loss gives the total loss corresponding to the weather. Thus the loss in this case is 120 per cent of 60, *i.e.*, 72, the corresponding Admiralty constant being 280—72=208.

So long as the moderate percentage plus twice the heavy plus three times the very heavy is constant, the total loss, under our assumption, will be constant. This fact at once suggests the use of this number to represent weather intensity. With a four-grade classification, it follows that with intensity numbers derived as above, zero corresponds to fine weather, 100 to moderate, 200 to heavy, and 300 to very heavy.

This suggests the use of a simple diagram with base of weather intensity factor and ordinates of Admiralty constant. At the respective intensities 0, 100, 200, and 300, we can erect the Admiralty constants found from our weather analysis, and the best straight line should be drawn through the resulting points. This device in itself tends to make the process a more valid means of averaging.

The various actual diagrams given in Fig. 7 show the success with which this method has been applied in the author's practice.

It will be seen that the passage averages lie definitely about the line; and in fact where a spot is below or above the line, reference to the original conditions on the passage and a consideration of weather, likely currents, fouling, or working at reduced speed, generally gives a plausible explanation for the location of the spot.

This performance diagram, as we will call it, should thus be of considerable use to the shipowner and his technical advisers. All that need be done in their case is to plot the values of the passage average Admiralty constants opposite their weather intensity factors. The voyage average results should be similarly plotted. Through these *voyage* spots a straight line should be drawn to lie best through the passage spots. The intersection of this line with 0, 100, 200 and 300 intensity ordinates enables a good check or estimate of the fine, moderate heavy and very heavy weather Admiralty constants to be made without the very real labor of determining these directly. Once this line is determined, it can serve many purposes. For example, for sister ships, if the results are plotted in this form, the time-honored view that sister-ships are always different will be rapidly disposed of, and it will be realized what an important part weather plays in distorting the comparative performance of sister ships.

Another use of the diagram is in the detection of fouling. By placing the Admiralty constant at its correct weather intensity, the drop from the mean line will be at least some measure of the loss of efficiency due to fouling.

Finally, the performance diagram can play a very important part in the collaboration between builder and owner in the satisfactory contracting for a vessel of given sea

Generated on 2024-09-12 12:43 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

speed. All that is necessary in addition to specifying his sea speed is to specify simultaneously the weather intensity number for his particular trade, as made evident from the study of his voyage statistics in the light of the methods of this section.

In conclusion, it may be pointed out that the weather classification is merely an attempt to place observations between two extremes. The extremes themselves should present no difficulties, and in the assessing of the two intermediates, moderate and heavy, the ship's officers, as is evident from the figures on Fig. 7, manage to do this quite well.

Viewed in its most general form, the scientific purpose of the performance diagram is two-fold. First, it enables the fine-weather performance of the vessel to be determined (either by direct analysis or extrapolation of voyage averages); and second, the slope of the performance line tells us how rapidly the vessel's efficiency falls away with increasing weather severity.

The Power Diagram and Its Use in Detecting Fuel Waste in Service

To make possible the methods of the previous section, coal was deliberately eliminated from the question of sea performance, it being argued in effect that coal consumption was related only to engine performance and to coal quality.

Once we have a means of correctly determining average horsepower the efficiency of the engine installation can be very easily investigated. To carry out the investigation with confidence, we first require the passage average daily consumption and the passage total weight of ash and clinker discharged. From these figures we get the true average ash percentage; and as the calorific value of dry coal varies remarkably reliably, but somewhat rapidly, with the ash

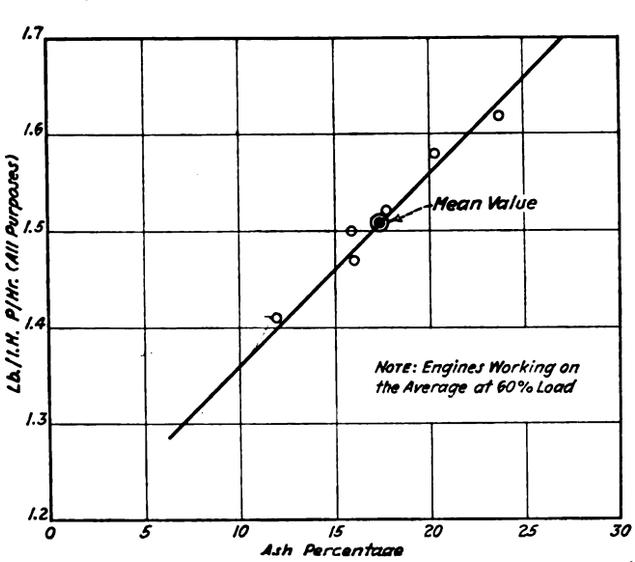


Fig. 8

percentage, it is essential that this percentage be determined as above-mentioned and not (as all too frequently happens) by a single sampling.

The performance on each passage should thus be considered, and from the average power deduced from our power diagram, in conjunction with the average daily coal consumption, the corresponding fuel rate as measured by pounds of coal per indicated horsepower per hour can be calculated. Next a diagram should be prepared having for base, ash percentage and ordinates, fuel rate. Every related observation of fuel rate and ash percentage should be plotted in this diagram. Once the number of passages is sufficiently large it will be found that the resulting spots are defining a straight line increasing with ash percentage. The average of all the spots should next be found (by reference to voyage totals) and indicated on the diagram. A straight line should be drawn through this mean spot to lie best through the remaining spots. This line gives the fuel performance standard for any ash percentage. The diagram corresponding to the vessel indicated by diagram B in Fig. 7 is shown in Fig. 8. This vessel uses superheated steam.

The most prolific cause of all the waste is most probably that the very considerable difference between maximum power and average power is not appreciated by the engineer. To show engineers what this means the author has passed on to several chief engineers the power diagram for their particular ship. The engineer is taught to use the diagram and first gain confidence in its use by discovering for himself that his "maximum-steam" cards can be accurately predicted by the diagram. He then appreciates that if his revolutions drop two or three during the day, he has lost well on to 200 indicated horsepower and that the true pounds per indicated horsepower per hour based upon average power is probably far from efficient. It is the author's very definite experience that engineers who are using these diagrams are doing so with enthusiasm.

A measured-mile trial, lasting at most six hours, is too valuable and costly an experiment for a builder ever to run the risk of its being useless. As at present carried out, there is no possible doubt that many trials are definitely useless. The author submits, however, that when the load trial is considered in the light of the present paper, and used to produce a power diagram by means of which the service efficiency of the vessel can be continuously checked, the attitude of the owner and his technical representative towards the load trial should undergo a definite change.

Critical Speeds—I

By F. McAlister

THE prediction of the speeds at which humps and hollows should occur in the resistance curve of a vessel has long defied any precise treatment, and cases are on record where Baker's (P) theory, even neglecting its admitted error with regard to the final or major hump, has singularly failed to predict humps and hollows at the lower and more economical speeds. It is increasingly evident that although the position of humps and hollows depends primarily upon fullness, there must be either some other feature influencing the synchronism of the wave systems or the rate of variation is other than the fullness.

At the risk of repeating what is undoubtedly very well known to naval architects generally, it is proposed to recapitulate the main features underlying interference phenomena. Admiral D. W. Taylor in 1894, and later Mr. Baker in 1913, read papers before the Institution of Naval Architects in which they dealt with the calculated pressures in two dimensions round a stream form resembling in plan view the sectional area curve of a vessel. The pressures were calculated on the assumption that the vessel was at rest with the surface of the water ice covered and another ice sheet at the level of the flat bottom, the water flowing round the form between the ice sheets.

The resulting curves of pressure qualitatively indicated what might be expected to occur round a ship shaped form in open water. One point worthy of notice is that in Baker's paper the stream forms all ended tangentially to the center line in order to give a pressure curve with a finite ordinate; if the stream form had been given an angular termination like a ship, the curve would have had a cusp at the point of

Generated on 2024-09-12 12:29 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

maximum pressure occuring practically at the stem. Generally, the stream forms of the fuller prismatic coefficients had curves of pressures somewhat as shown in Fig. 1.

The outstanding features of the wave system surrounding a moving vessel will be formed by the portions of the pressure curve where the changes of pressure occur. Thus, there will commence from B and E a series of positive

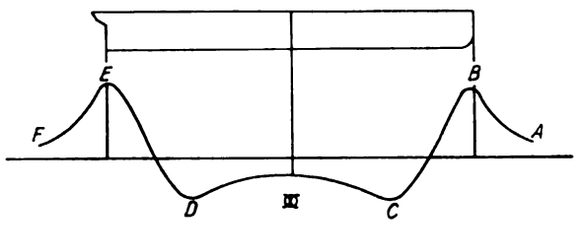


Fig. 1

diverging and transverse waves and from C and D a series of negative diverging and transverse waves. Excess of resistance, or a hump above the normal resistance curve, occurs when waves of the same phase synchronize, and a defect of resistance, or a hollow below the normal resistance curve, when waves of the opposite phase synchronize.

A hump should therefore be found when the trough of the residuary bow wave created at the point B coincides with the trough in course of generation at either point C or at point D; and similarly, a hollow should be found when the crest of the residuary bow wave generated at the point B coincides with either of the points C or D.

Quantitative figures derived from a study of the pressure curves for stream forms can only be applied tentatively to the analysis of critical speeds, and no progress can be made in the establishment of a theory until a relationship between the features of the pressure curves and actual resistance curves is found. The latter form a large field for research and present a ready means for analytical work. From a large number of such analyses, the curve shown in Fig. 2 has been deduced. Each spot marks the deduced figure for the ratio of the distance of the pressure dip from the ends of the vessel and the half-length of the stream form; in other words, the ratios of B.C./B. and D.E./E. In the case of a vessel with parallel body, the length of purely parallel body has been omitted from the dimensions of the stream form as it does not participate in any way with the creation of waves; its only function from the point of view of interference is to separate the wave making features of the vessel. In this respect it is taken into account as will be shown later. The ratios mentioned above have been designated as "w", and a curve, drawn to represent the average values in Fig. 2, has been found to be capable of representation by the empirical relationship, $w = 3 (1 - \phi)^2$ where ϕ is the prismatic coefficient of the particular end of the vessel that is under consideration.

It is sometimes pointed out that the position of the bow crest moves aft with increased speed-length ratio, but observation on ships appears to show that the movement, if any, is slight; model experiments such as those shown in Mr. Kent's 1915 paper before the Institution of Naval Architects dealing with model 111D appear to justify the assumption regarding the lack of movement of the bow wave crest. Taking into consideration also the fact that the length of the waves over the entrance and run may not be equal to the theoretical length of waves according to the trochoidal theory, i.e., $L = 0.557 V^2$, where V is the speed in knots, the approximate nature of this investigation may be realized, and any slight movement of B will pass unnoticed in the general application of the work.

Since the length of the waves round a ship are approximately varying as the square of the speed, once the position of the maximum hump is predicted, the other humps on the resistance curve due to the synchronism of the residuary bow wave with the particular pressure dip will naturally follow according to the well known root sequence as enunciated by R. E. Froude in the *Transactions* of the Institution of Naval Architects for 1881.

From the above remarks, it will be seen that interference is likely to appear on the resistance curve in the form of a hump when ½, 1½, 2½, etc., wave lengths coincide with the lengths B.C. or B.D., and in the form of a hollow when 1, 2, 3, etc., wave lengths coincide with the lengths B.C. or B.D., and expressing this relationship algebraically we have

$$\text{Critical speed } V = \sqrt{\frac{Le \times w}{0.557 \times n}} \quad \text{and} \quad \sqrt{\frac{L-(Lr \times w)}{0.557 \times n}}.$$

$$\text{i.e. } V = 1.34\sqrt{\frac{Le \times w}{n}}, \text{ and } 1.34\sqrt{\frac{L-(Lr \times w)}{n}}.$$

where V is the speed in knots and Le, L and Lr are the lengths of entrance, total ship and run respectively, and n for humps is ½, 1½, 2½, etc., and for hollows 1, 2, 3, etc. It will be found that the major humps caused by both the bow and stern interference occur when n is equal to ½.

To illustrate the application of the formula to determine the position of the major hump we can take the case of a high speed boat 300 feet long of, say, 0.63 total prismatic coefficient. The usual type of form would have no parallel

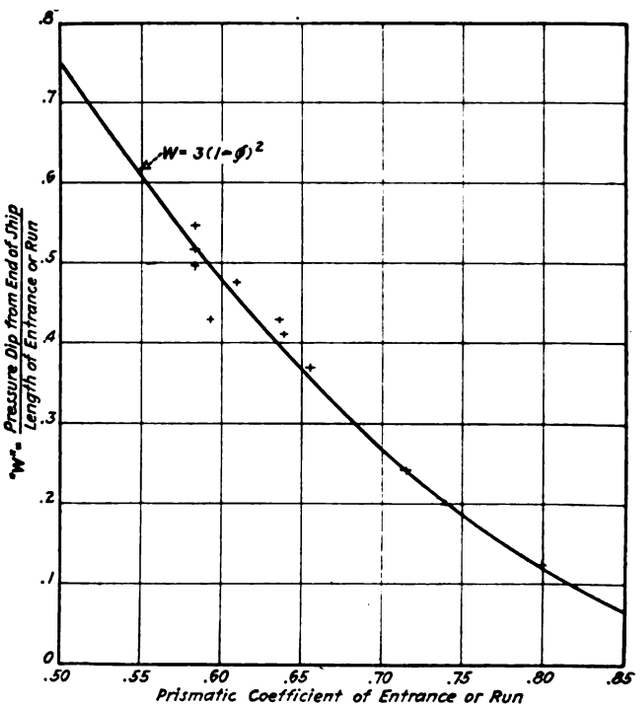


Fig. 2.—Curve of "W" values on base of prismatic coefficients

body, a prismatic coefficient of run of 0.70, and a length of run equal to half the length of the vessel. Find the critical speed V for the major hump?

$$w = 3\ (1-\phi)^2,\ = 3\ (1-0.7)^2,\ = 0.27$$

$$\therefore\ V = 1.34\sqrt{\frac{L-(Lr \times w)}{½}},\ = 1.34\sqrt{\frac{300-(150 \times 0.27)}{½}},$$

$$V = 30.5 \text{ knots.}$$

This speed marks exactly the top of the major hump on the actual resistance curve of the vessel in question.

Generated on 2024-09-12 12:34 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Mr. Baker has developed his (P) theory along lines which, to a certain degree, have borne a fair measure of success in the prediction of critical speeds for slow speed length ratios, but he has failed to predict the major hump by the same methods.

According to the (P) theory the major hump should occur at the speed

$$V = \frac{1.34\sqrt{\phi L}}{\frac{1}{2}}$$

where ϕ is the total prismatic coefficient of the vessel.

Thus $$V = \frac{1.34\sqrt{0.63 \times 300}}{\frac{1}{2}}$$

$$V = 36.8 \text{ knots}$$

the (P) value being 2.

Mr. Baker, in admitting the inability of the (P) theory to predict the major hump, has stated that he finds, for high speed vessels, the major hump to be in the region of (P) = 1.50.

The (P) value for the predicted speed of 30.5 knots as shown above would be

$$(P) = \frac{0.746 \times 30.5}{\sqrt{0.63 \times 300}}$$

$$(P) = 1.65.$$

which concurs with Mr. Baker's statement.

(To be continued)

American Merchant Marine Decreases

THE American merchant marine has declined 7½ percent in tonnage since 1920, according to an analysis made by the National Industrial Conference Board, 247 Park Avenue, New York. While the total world tonnage of merchant ships has increased 16 percent during the last six years, from 51,786,120 gross tons in 1920 to 60,069,411 tons in 1926, the gross tonnage of merchantmen sailing under the Stars and Stripes has decreased from 12,406,123 gross tons in 1920 to 11,472,824 tons in 1926. Despite this decline, the United States still holds its place as the second most important maritime nation.

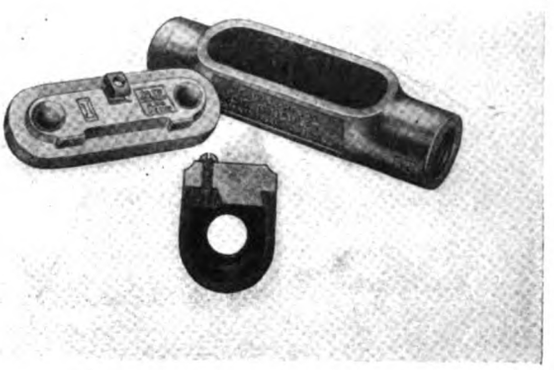
Germany, having lost nearly all, or about nine-tenths, of her merchant marine through the war, again looms as the fastest growing maritime nation, her merchant marine having increased 630 percent in gross tonnage from 1920 to 1926. At that, while she has built or repurchased ships totalling 2,642,657 gross tons since 1920, she has recovered only about three-fifths of her pre-war strength, her total gross tonnage at the beginning of the current year amounting to 3,062,095 tons, as against 5,134,720 tons in 1914, and only 419,438 tons in 1920. Italy and Japan follow next in order as regards the rapidity with which they are increasing their mercantile marine. Italian merchantmen, totalling 2,118,429 gross tons in 1920, now total 3,150,246 tons, an increase of 48.7 percent, clearly reflecting the vigor of the Mussolini regime. Japan has increased her mercantile tonnage from 2,995,878 tons in 1920 to 3,967,617 tons in 1926, an increase of 32.4 percent. France comes next, with an increase of 12.2 percent, from 2,963,229 tons in 1920 to 3,324,397 tons in 1926. The British merchant fleet of course continues to hold first place in total tonnage, but shows only 7.7 percent increase for the six years, from 20,142,880 gross tons in 1920 to 21,698,253 tons in 1926.

While just before the war only about one-tenth in value of the foreign trade of the United States was being carried in American bottoms, our own ships in 1920 were carrying more than 40 percent in value of our exports and imports. By the beginning of the current year, American ships were carrying only 32 percent of our foreign trade. The United States today, however, has ships enough to carry in the future a larger proportion of its own foreign trade than it did during the last four decades before the war.

New Conduit Fittings

THE Crouse-Hinds Company, Syracuse, N. Y., has produced a new line of "obround" condulets that incorporates many practical and time-saving features, based on a new method for fastening covers and wiring devices to a condulet, known as the wedge-nut fastener. A few turns of the screw driver and the cover or wiring device is on, and on to stay, and cannot become loosened by vibration.

With this new form of construction there are no screws projecting inwardly to injure the conductors. Because of the unobstructed cover opening, conductors may be easily pulled without injury to them, for there are no projecting lugs. The unobstructed cover opening and large wiring chamber make splicing and taping easy.



New Crouse-Hinds condulet

Another outstanding feature is that the covers and wiring devices may be conveniently installed even in difficult places as they can be turned so as to bring the fastening screws into an accessible position. Being complete units, no parts of the cover or wiring can be lost during installation.

Cutter Northland Given Sea Trials

THE first United States coast guard cutter to be equipped with Diesel-electric drive, the *Northland,* was given its sea trials recently at Newport News, Va. The vessel was constructed by the Newport News Shipbuilding & Drydock Company, and will be immediately placed in active patrol service.

Designed for a speed of 12 knots, the *Northland* is driven by a single propeller running at a speed of 120 revolutions per minute. The total shaft horsepower of the propulsion equipment is 1,000.

The power plant is extensive, consisting first of two main generators, two auxiliary generators mounted on shaft extensions of the main generators and three independently driven auxiliary generators. All these generators are driven by Diesel engines, those for the main generators being built by the McIntosh & Seymour Company, two of the auxiliary engines being of Winton make and the other, of Cummins manufacture. Practically all of the electrical equipment is of General Electric manufacture.

Generated on 2024-09-12 12:29 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Questions and Answers for Operating Engineers

Practical information for marine engineers on the operation and maintenance of boilers, engines and auxiliaries

This department is maintained to help those who desire practical information regarding engine room problems or who are preparing to take examinations for a marine engineer's license. Readers are urged to send in questions. Inquiries bearing the name and address of the writer will be answered promptly by mail. If the question is of general interest the answer will also be published in an early issue of the magazine, although the identity of the writer will not be disclosed in doing so. Anonymous communications will not be considered.

Loose Propeller

Q.—If a propeller starts to get loose on the shaft, how will it show up in the engine room?

A.—It will cause a vibrating knock to be felt and heard, especially when stopping, starting or reversing the engine.

Rose Boxes

Q.—In ships with double bottoms, where does the bilge water lie and where are the rose boxes fitted?

A.—The bilge water lies on both port and starboard sides of the double bottoms. The rose boxes are fitted at the end of each bilge suction pipe and act as strainers.

Slack Thrust Bearing Bolts

Q.—If the holding down bolts of a thrust bearing should become slack, what effect would it have upon the working of the engines?

A.—The shaft would be forced forward or drawn aft by the propeller when going ahead or astern and the crank would be out of line with the cylinder. The effect would be heated bearings, possibly bent rods, also a tendency to break the after web or pin or any possible bad breakdown.

Crank Subject to Greatest Torsional Stress

Q.—In an engine with three cranks which is subject to the greatest torsional stress; (first) in going ahead; (second) in going astern?

A.—The after crank in either going ahead or astern, due to the fact that the power of the other two engines is exerted on it as well as the direct power from its own cylinder.

Stresses

Q.—What is meant by the terms "breaking stress" and "safe working stress?"

A.—Breaking stress is the stress that would break or fracture the material. Safe working stress is the stress at which it is safe to work the material, and is generally about one-sixth of the breaking stress.

Air Pump Bucket

Q.—Describe an air pump bucket with valves and packing.

A.—An air pump bucket is a circular brass casting with a recess cut around the outside to hold packing to make it air and water tight. Holes are cut in the bucket to allow the water from the condenser to pass through it, and valves are fitted over the holes to prevent the air or water returning. The packing is generally metallic or flax. The valves are made of either brass or rubber.

Propeller Shaft Sleeve

Q.—What part of a shaft is generally covered with brass? Why is it necessary and how thick is the brass as a rule?

A.—That part of the tail shaft where it turns on the lignum vitae bearing and at the stuffing box in the stern tube. It is generally about ¾-inch thick, shrunk on and secured with pins screwed into the shaft and then riveted over.

Speed of Piston

Q.—What is meant by "speed of piston?"

A.—Speed of piston is twice the stroke in feet multiplied by the revolutions per minute. *Example:* 54 inches stroke, 100 revolutions. What is the speed of piston:

54	12) 108 (9 feet	100 revolutions
54	108	9 feet
108		900 feet speed.

How to Check Foaming

Q.—How would you check foaming?

A.—Slow down engine, put on extra feed and give the boiler a "blow," if necessary.

Priming

Q.—What precautions are necessary when a boiler is priming?

A.—Open all drains on the engine and slow down.

Stress on Staybolt

Q.—What stress would be on a staybolt 6½ inches pitch, 180 pounds steam pressure?

A.—$6.5 \times 6.5 \times 180 = 7{,}605$ pounds stress.

6.5	42.25
6.5	180
325	338000
390	4225
42.25	7,605 pounds stress

Direct and Alternating Current

Q.—What is meant by direct and alternating current?

A.—An electric current is said to be direct when it is of unvarying direction, alternating when it flows rapidly to and fro in opposite directions.

Why Brushes Spark

Q.—What are some of the causes of brushes sparking?

A.—(1) The machine may be overloaded. (2) The brushes may not be set exactly at the point of commutation; a position can always be found where there is no perceptible sparking, and at this point the brushes should be set and secured. (3) The brushes may be wedged in the holders or have reached the end of their travel. (4) The brushes may not be fitted to the circumference of the commutator. (5) The brushes may not bear on the commutator with sufficient pressure. (6) The brushes may be burnt on the ends. (7) The commutator may be rough. (8) A com-

Generated on 2024-09-12 12:36 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

mutator bar may be loose or may project above the others. (9) The commutator may be dirty. (10) The brushes may not be equally spaced around the periphery of the commutator. (11) Some brushes may have extra pressure and may be taking more than their share of the current. (12) High mica or vibration of the brushes.

These are some of the common causes, but sparking may be due to an open circuit or loose connection in the armature. This trouble is indicated by a bright spark which appears to pass completely around the commutator, and may be recognized by the scarring of the commutator at the point of open circuit. If a lead from the armature winding to the commutator becomes loose or broken, it will draw a bright spark as the break passes the brush position. The trouble can be readily located, as the insulation on each side of the disconnected bar will be more or less pitted.

The commutator should run smoothly and true with a dark, glossy surface.

Heating of Armature

Q.—Give a few reasons for heating of armature.

A.—Heating of an armature may develop from carrying too great a load, a partial short circuit of two coils heating the two particular coils affected, or short circuits or grounds on the armature or commutator.

Heating of Commutator

Q.—Give some reasons for heating of a commutator.

A.—Heating of a commutator may be caused by overload, sparking at the brushes, too high brush pressure, or lack of lubrication on the commutator.

Carrying Capacity of Electric Wiring

Q.—What is meant by the carrying capacity of a wire used in electrical work?

A.—The amount of current a wire will carry without heating to such an extent as to cause danger of burning the insulation and perhaps causing fire.

Temperatures

Q.—What is the temperature of melting ice, boiling water, steam at about 60 pounds, 100 pounds and 150 pounds by the steam gage, also of smoke in the funnel and of water in the hot well?

A.—The temperatures taken by a Fahrenheit thermometer are as follows: Melting ice, 32 degrees; boiling fresh water, 212 degrees; boiling salt water, 213 degrees; steam at 60 pounds pressure, 307 degrees; at 100 pounds pressure, 337 degrees; at 150 pounds pressure 367 degrees. The temperature of the smoke in the funnel should run from 600 to 700 degrees and the hot well from 140 to 160 degrees. The hot well temperature should be carried as high as the feed pump will take it without slamming.

Indicated Horsepower

Q.—What is indicated horsepower?

A.—Indicated horsepower is the actual power which an engine develops as calculated from the mean effective pressure in the cylinder as determined by an engine-indicator. the area of the piston and the speed of the piston.

Single Acting and Double Acting Engines

Q.—What is the difference between single acting and double acting engines?

A.—In the single acting engine fuel injection and combustion occur only in one end of the cylinder and pressure tending to move the piston and cause the shaft to turn is exerted only on one side of the piston, while in the double acting this action occurs in both ends of the cylinder and the piston exerts power on both upward and downward strokes.

Valves on Four and Two Cycle Engines

Q.—What valves are required on 4-cycle and 2-cycle engines?

A.—The 4 cycle requires air inlet, exhaust, fuel injection, starting and relief valves. The 2 cycle requires only fuel injection, starting and relief valves, but, if valve scavenging is used, it requires scavenging valves also.

Compression in Diesel Engine

Q.—What compression is normally used in the Diesel engine?

A.—450 to 500 pounds.

Horsepower Equivalent

Q.—What is the equivalent of one horsepower?

A.—33,000 pounds lifted one foot in one minute.

"Conduction" and "Convection"

Q.—Please distinguish between the terms "conduction" and "convection."

A.—Each term is descriptive of a method of heat transfer from one body or part of a body to another.

Conduction is the method by which the transfer is made by direct contact between the bodies or their parts.

Convection is the method by which the heat is carried from one body or its part to another by means of a medium with which both are associated.

How to Stop Pounding in Water End of Pump

Q.—What may be done to stop pounding in the water end of a reciprocating pump with a considerable suction head?

A.—Throttle the suction slightly or fit heavier springs in the suction valves.

Boiler Furnace Lining

Q.—Why is it customary to bead over the cement in the joints of boiler furnace lining?

A.—This is done in order to facilitate the welding of the cement with the edges and corners of the bricks, the portions which are most apt to crumble. When the cementing is carefully done and the minimum thickness used between the bricks, there will be a minimum of deterioration.

Interval Between Boiler Cleanings

Q.—What is a reasonable interval between successive examination and cleaning of boilers?

A.—Navy practice provides for examination and cleaning as found necessary after 700 hours of ordinary steaming have elapsed since previous examination. This time may be lengthened or shortened somewhat, depending upon the character of the operating conditions experienced.

Why Wrenches Should Not Be Used for Opening Valves

Q.—Are there valid objections to the use of wrenches for closing valves?

A.—The increased leverage obtainable by the use of a wrench is frequently sufficient to spring the valve. Because of this the use of wrenches in this way should not be countenanced. If a valve leaks or sticks, it should be examined and ground in or eased up as required, so as to be readily manipulated without a wrench.

Generated on 2024-09-12 12:34 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Questions and Answers Relating to Naval Architecture and Marine Engineering

Conducted by James L. Bates, Naval Architect, and W. B. Newton, Marine Engineer

This department is maintained for the purpose of answering all questions relating to ships and their machinery. All inquiries should bear the name and address of the writer. Anonymous communications will not be considered. The identity of the writer, however, will not be disclosed unless the editor is given permission to do so.

Highest Destroyer Speed

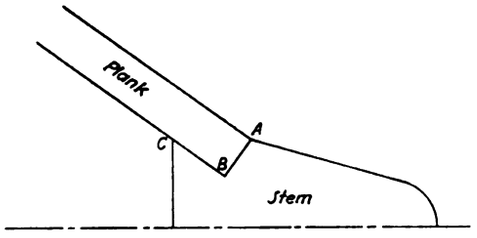
Q.—What is the highest speed made by any U. S. destroyer on standardization trial; that is, the average of the high runs?

A.—The U. S. destroyer *Satterlee* (DD 190) built by the Newport News Shipbuilding and Dry Dock Company of Newport News, Va., in June, 1920, made an average of 37.17 knots on her five high speed standardization runs over the official course off Rockland, Maine. Her displacement at the middle of these runs was about 1,230 tons. This is the highest speed on standardization trial of which the writer is able to find record.

Bearding Line

Q.—What is the bearding line?

A.—The bearding line is the after edge of rabbet. In the sketch reproduced herewith, taken from Watson's "Naval Architecture—A Manual on Laying-Off." the



Sketch showing location of bearding line

boundary line, or fore edge of rabbet, is at A; the middle line of rabbet is at B; the bearding line, or after edge of rabbet, is at C.

Feed Tank Vapor Pipe

Q.—I would like to ask if there is any established rule for determining the size of pipe to provide for the escape of air in the discharge line from the air pump to the hot well? The condition I have in mind as at present existing has a 12-inch discharge from the air pump, through a 12-inch by 12-inch by 7-inch tee, the 7-inch connection being to the hot well, while a stand pipe 12 inches in diameter and about 7 feet long above the 7-inch outlet is provided for the escape of the air. While in operation, water is discharged over the top of the discharge pipe, in some measure, and it is impossible to make the pipe longer because of the deck above. Would a larger connection to the hot well, with perhaps a smaller stand pipe, remedy the trouble?

A.—The size of a feed tank vapor pipe seems to vary with the judgment of the contracting engineer.

The arrangement described in your question is somewhat unusual and would appear to be faulty in its idea. Had the connection to the tank been 12 inches and the vapor pipe 7 inches better results might be realized though I fear that an overflow pipe to the bilge may be necessary to obviate your trouble in case the discharge from the air pump be momentarily in greater quantity than the feed pump is called upon to handle.

A much better system would be to have the air pump discharge connect independently to the feed tank and a 7-inch overflow pipe with a gooseneck lead from the top of the tank to the bilge, so arranged that any water passing down it may be seen. This may be accomplished by making the pipe open-ended just below the gooseneck with the pipe running to the bilge to have a funnel at its top. Should the tank have filter chambers, a 2-inch vapor pipe should run from each compartment combining into a common pipe leading to the escape pipe.

Welding Cracks in Vanadium Bronze Castings

Q.—Can cracks in vanadium bronze castings which are subject to vibration similar to bed plates of marine engines be successfully welded?

A.—There is some doubt as to just what the composition of vanadium bronze might be. On that basis it would be difficult to say definitely that vanadium bronze can be welded, but if the bed plate in question is of a composition similar to many bed plates which have been welded there is no doubt about the practicability of this sort of repair. In general used bed plates of marine engines can be successfully welded even though the part in use is subject to vibration. The type of metal involved might necessitate some special procedure, and it is recommended that unless the organization back of the work has had considerable experience with the oxy-acetylene process they obtain the advice and assistance of the manufacturer of oxygen with whom they do business.

LETTERS TO THE EDITORS

Tests of Navy Type Detachable Links and Kenter Connecting Shackles

WATERTOWN, Mass.

TO THE EDITORS:

There appeared in your March issue, pages 172 to 173, a description of the Navy type detachable links as compared with the Navy type Kenter connecting shackles. The writer was one of the men conducting the various tests to which the two types of connecting shackles were subjected and feels competent to point out slight discrepancies appearing in your otherwise excellent article.

The average breaking strength of the 2½-inch detachable links was 749,000 pounds, while the average breaking strength of the 2½-inch Kenter connecting shackle was 728,000 pounds. I may add further that both types of shackles were stressed to approximately 90 percent of the breaking load and no perceptible difference was noted in easy disassembling and reassembling of both types.

The statement is made that the "Kenter" can be more expeditiously disassembled as it is not necessary to remove the strain on the cable as is the case with detachable links. One of the shop tests to which the detachable link was sub-

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

jected was to determine the load (without permanent set) of the C link (without the coupling plates) the average load noted exceeded the proof load of wrought iron chain, viz.: 226,000 pounds.

A very practical drop test (not mentioned in the article), was conducted on both types of connecting shackles, which consisted of dropping the connecting shackles on end from a height of 16 feet on to a steel anvil block. The Kenter *broke* on an average of 28 drops, the detachables were dropped 100 times without a break, although they became somewhat distorted.

The above facts can be substantiated by references to the reports on the tests submitted to the Navy Department.

JAMES REID.

New System of Passenger Accommodation

Newport News, Va.

TO THE EDITORS:

The article "New System of Passenger Accommodation for Ships," appearing in the April issue of MARINE ENGINEERING AND SHIPPING AGE, describing and illustrating certain original ideas and the development of a system of passenger accommodation for ships, is very interesting and particularly appropriate at this time. The arrangement of passenger accommodations is a subject that is sometimes not given the time and study necessary to insure the most desirable and economical arrangement. It has been my privilege to have observed the manner in which Mr. George G. Sharp proceeds to develop the passenger accommodation for a vessel; suffice it to say here that the predominating idea is to obtain an orderly arrangement, at the same time giving the maximum comfort for the passenger.

There are, however, statements in the article which are apt to cause considerable comment and about which some difference in opinion will exist. One of these is the statement that this system makes each stateroom an outside stateroom. For coastwise and river steamers having verandas similar to that illustrated in Fig. 9, page 216, it is agreed that the staterooms adjoining to the veranda can be considered as outside staterooms; but it requires a stretch of the imagination to say that the staterooms adjoining the verandas illustrated in Figs. 5 and 10 are other than improved inside staterooms.

What the proposed "stepped" principle arrangement of passenger staterooms does is to group the passageways of the "Bibby" systems utilizing this area and in addition the width of the communicating passage to form the veranda. This, from some viewpoints, is a decided improvement over the "Bibby" system. However, there are others who will contend that the "Bibby" system, where each stateroom has its own air port directly communicating with the outside atmosphere is superior. Will the passenger consider the inboard rooms, adjoining the veranda, outside rooms in the same sense as the "Bibby" rooms or the outside rooms next to the shell of the vessel? That is dependent upon the psychology of the passenger and only actual installations in service can satisfactorily solve that question. My own views are that, however desirable the veranda principle may be, the passenger having an inboard room will feel that it is an inside room. The remarks in this paragraph deal particularly to the arrangements indicated in Figs. 5 and 10.

The "saw-tooth" principle of passenger staterooms appears to be admirably adapted to coastwise, sound and inland vessels, engaged in overnight runs. When reference is made to the deck arrangements shown on Fig. 8 and compared with the conventional arrangements of the usual Great Lakes passenger vessel, particularly those of the *Greater Detroit* and the *Greater Buffalo*, it will be seen that the system developed by Mr. Sharp is far superior.

In the transatlantic service, the "saw-tooth" and "stepped" principles of arrangement are not apt to be adopted. Even though verandas are provided in any particular vessel, no attempt should be made to reduce the deck space ordinarily set aside for promenade purposes. I mention this because some contend that the verandas are preferable to promenade space. The trend of the times is to provide greater promenade and deck space than ever before. The systems which Mr. Sharp has developed necessarily require having a centerline passage with split boiler uptake and engine casings; thus it will be observed that the systems are not well suited for the intermediate passenger and cargo vessel, particularly in the 'tween decks, in way of cargo hatch trunks placed on the centerline. For the intermediate vessel, in the ocean service, having boiler and engine casings, cargo hatches, stair well openings and public room wells on the centerline, the conventional system laid out in a systematic and orderly manner will work out to the passengers' and owners' advantage. The central passage does not appear to have the advantages of general access and egress afforded by two remote passages ordinarily next outboard of the casings.

Mr. Sharp has contributed the only original work to the subject of passenger accommodation that has appeared in the technical press in recent years. For concentration of plumbing, heating and ventilation, Mr. Sharp's systems are ideal. Could not other naval architects be persuaded to contribute to this very interesting and important subject?

CARL E. PETERSEN.

PERSONAL MENTION

M. F. ARBINI after several months ashore has joined the steamship *Atlas* of the Standard Transportation Company as third assistant engineer.

E. W. KIRKPATRICK has been promoted to first assistant engineer of the steamer *Yosemite* of the Cleveland-Cliffs Iron Company's fleet on the Great Lakes.

AXEL J. HANSON has been made first assistant on the engineering staff of the steamship *Lansing* owned by the Union Steamship Company, San Francisco, Cal.

FRANK H. BULUS has been promoted to the position of first assistant engineer on the steamship *President Polk* of the Dollar Steamship Line, succeeding Francis J. Mathewson.

F. DECKARD, at present chief engineer of the steamship *McKeesport* of the America-France Line, was formerly chief engineer of the steamship *Hoxbar* operated by D. Mallory Company, New York.

J. W. PHILPOTT, formerly chief engineer of the steamship *Huron*, operated by the Clyde Line, New York, has been made chief engineer of the steamship *Philadelphia* also operated by this company.

P. HIRSCH has been made first assistant of the steamship *McKeesport* of the America-France Line. Mr. Hirsch was formerly assistant engineer of the steamship *Montauk* owned by the International Mercantile Marine Company, New York.

OSCAR H. MOREND who for some time has been first assistant of the steamship *Noyo* of the National Steamship Company, San Francisco, Cal., has been promoted to the post of chief engineer of the steamship *Brunswick* of the same company.

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

PETER WAGNER, who was formerly one of the engineers on the steamship *Finland,* of the International Mercantile Marine Company, New York, is now third assistant engineer of the steamship *President Harding,* United States Lines, New York.

R. W. CLARK has joined the publicity department of the Westinghouse Electric & Manufacturing Company, New York, in charge of marine publicity and advertising, reporting to Lesley C. Paul, manager of the transportation section of that department.

E. A. KELLY, vice president in charge of operations for the Clyde Line, New York, was appointed director of operations of the Merchant Fleet Corporation, in place of James A. Wilson, by the Shipping Board on April 12. Mr. Kelly assumed his new duties on April 19. Mr. Kelly is a native of Kingston, N. Y. All of his business career has been in the shipping business and he has been associated with the Clyde Line more than 30 years, first as secretary to the general manager, chief clerk to the general manager, assistant to the vice president and then general superintendent of the Clyde Line. Later he became general agent of the Clyde and Mallory Line, assistant general manager, and finally vice president of the Clyde and Mallory Line. During the war, he was representative of the coastwise lines on the National Adjustment Commission; he also served for the railroad administration, giving attention to terminal labor matters and other phases of like character. In addition he was an adviser to the administration on ship personnel matters. He is now chairman of the personnel committee of the American Steamship Owners Association, and has held that position for several years. He is widely known in shipping circles and brings with him not only years of practical experience in shipping matters, but the good will and confidence of all with whom he has associated.

E. A. Kelly

CLIFFORD SMITH, assistant director of the Merchant Fleet Corporation at New York, is to be transferred to Paris as assistant director of the United States Lines, and Albert N. Atterholt will be sent from that post in Paris to a similar one in Bremen.

JAMES K. INGHAM of the staff of Theo. E. Ferris, naval architect, 30 Church street, New York, recently sailed on the steamship *Olympic* on his way to Kiel where he will supervise construction of the $1,000,000 yacht ordered by Vincent Astor from Krupps.

NORMAN F. TITUS, chief of the transportation division of the Department of Commerce, will sail from New York on May 25 for a trip of investigation in Europe including the subject of "the present trend in European ship construction," among others.

HENRY THIELMEYER has been appointed first assistant on the steamship *West Chopaka* of the United States Shipping Board by E. C. Mathewson, chief engineer of this vessel. William J. Gaskey and Ray Brady are second and third engineers respectively on this vessel.

R. H. GUNZEL, formerly port engineer of the United States Shipping Board, San Francisco, and later superintendent engineer for Struthers & Barry of San Francisco, was recently appointed to the position of port engineer for the Charles Nelson Company, San Francisco.

J. J. BROWN, who for the past nine years has been in charge of the installation and service work of marine electrical machinery for the Westinghouse Electric & Manufacturing Company, has been appointed manager of marine service for the Westinghouse company with headquarters in New York.

R. J. MORGAN, who formerly held the post of assistant engineer with the Mississippi Shipping Company, is now second assistant on the steamship *McKeesport* of the America-France Line. The third assistants on this steamship are A. Moven and Richard Edenfield, who was formerly assistant engineer with the Tampa Interocean Company.

ARTHUR MCDOUGALL, who for the past five years has been with the Morse Drydock and Repair Company, Brooklyn, New York, supervising outside work, and previous to that time in responsible positions with the leading shipyards on both the east and west coasts, has become associated with the Capstaff-Hunter Turbine Works of Hoboken, N. J.

E. M. BULL, president of A. H. Bull & Company, 40 West street, New York, was elected chairman of the American Steamship Owners' Association at a recent meeting of the executive committee, succeeding Edgar F. Luckenbach, who declined to accept the position. The association has not yet elected a president to succeed Alfred Gilbert Smith, whose term has expired.

W. S. HOVEY was elected president of Fairbanks, Morse & Company, Chicago, Ill., at a recent meeting of the board of directors. The former president, C. H. Morse, has been made chairman of the board. Mr. Hovey was born in 1875 and was educated at Cornell University. In 1902 he joined the Sheffield Car Company, an affiliation of Fairbanks-Morse, as assistant superintendent. He later became superintendent and held his position until 1913 when he was transferred to the Beloit works of Fairbanks-Morse as manager of the engine division. A few months later he was made general manager of this plant. In 1919 Mr. Hovey was elected vice president in charge of all the manufacturing activities of Fairbanks-Morse and in 1924 became general manager of the entire business. He will continue to carry on the duties of general manager.

W. S. Hovey

M. L. WALKER was re-elected president and T. H. Rossbottom was elected vice president to fill the place formerly held by E. A. Drake, who died last January, at the annual election of officers of the Panama Railroad Company, New York. Other officers elected were: Harry Burgess, second vice president; W. R. Pfizer, secretary and V. M. Newton, treasurer.

C. CARAGEORGE, chief engineer of the Shipping Board motorship *Sawokla,* was formerly chief engineer for three years of the steamship *Empress of India;* two years as chief engineer of the steamship *Admiral Schley;* three years as chief on the turbo electric ship *Eclipse* and four years as

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

superintendent engineer of the Steven-Ransom Marine Works, Brooklyn, N. Y. He has had considerable experience with Winton Diesel engines and was assistant inspector for the Shipping Board at the Busch-Sulzer Bros.-Diesel Engine Works, St. Louis, Mo.

F. M. MALANY, Singer Building, New York City, has been appointed representative in the New York district for the Stewart Die Casting Corporation, Chicago, manufacturers of die castings and bronze bearing metal. Mr. Malany was formerly superintendent and chief engineer of the War Department in charge of operation and construction in the Canal Division and served as a captain in the Engineering Corps and was in active service in various parts of France. His engineering experience, which covers a period of 18 years, includes both operation and construction. Last year, with a number of other engineers, he formed the F. M. Malany Company. Mr. Malany is a member of the American Society of Mechanical Engineers.

OBITUARY

HENRY DEARBORN, vice president of the American-Hawaiian Steamship Company, died in Seattle, Wash., on April 3. He was 34 years of age.

FRANK L. JOHNSON, assistant superintendent of the Munson Steamship Line, New York, died at his home in Bloomfield, N. J., on March 23. Mr. Johnson had been associated with the Munson line since 1910.

CORNELIUS DELAMATER ROBINS died on Sunday, March 27, after a long illness from heart disease, at his home, 194 Wendell avenue, Pittsfield, Mass. He was in his 51st year. Mr. Robins was born in Northport, L. I., son of the late John N. Robins, founder of the Robins Drydock & Repair Company, Brooklyn, New York, which is now the Todd Shipyards Corporation.

CAPTAIN HORATIO HALL, long identified with the Maine Steamship Company, whose passenger steamers operated between New York and Portland, and for 38 years connected with the Eastern Steamship Company, serving the greater part of that time as New York manager, died at his home at Brunswick, Maine, recently. Captain Hall retired about 10 years ago.

ROBERT ELLWOOD ELLIS, inventor of the Ellis channel system of vessel construction and former superintendent of steel construction for the Seattle Construction & Drydock Company, died recently in New York city after a short illness. Mr. Ellis was born in Ireland in 1863 and was educated in George Watson's College in Edinburgh. For the past two years Mr. Ellis has made his headquarters at 30 Church street, New York.

H. L. DES ANGES, marine superintendent, Long Island Railroad at New York, who died on March 16 at his home in Flushing, Long Island, was born at Trenton, N. J., May 20, 1862. He graduated from the Freehold Institute at Freehold, N. J., in 1880 and commenced his business career in March, 1881, as apprentice in the Meadows Shops of the Pennsylvania Railroad. During his apprenticeship covering a period of 4 years, Mr. Des Anges served in the boiler, machine, erecting shops and in the testing department on air brakes and valve setting. He was then transferred to the drafting department where he remained a year and a half. While employed by the Pennsylvania Railroad Mr. Des Anges studied mechanical engineering at Cooper Union in Manhattan. About this time he was engaged by Michael P. Grace of W. R. Grace & Company to do special railroad work in South America for which purpose he was granted a furlough by the Pennsylvania Railroad. This assignment he completed in six months and then was placed in charge of the locomotive repair shops of the Aroya Railroad of Peru and for two years acted as operating head of the same road. Returning to the United States in 1889 Mr. Des Anges joined the Pennsylvania forces, being assigned by H. S. Haywood, then superintendent of motive power, to take charge of the designing of compound engines. The principal results of his efforts were the ferry boats *Schenectady* and *Washington* and the engines on the tug boats *Palmyra* and *Radnor*. He was then appointed general foreman of the yards at Hoboken, N. J., and later became assistant to master mechanic Hobart Canfield. Upon the recommendation of the late Frank L. Sheppard, then general superintendent of the New Jersey Division, Mr. Des Anges was given charge of the ferry operation of the Long Island Railroad Company in April, 1900. Two years afterward he was also placed in charge of the River and Harbor Transportation Company which concern looked after the floating of freight between the Pennsylvania and Long Island Railroad terminals. At this time also the Long Island Railroad Company decided to build marine repair shops which were subsequently established and a force organized at Whitestone under his direct supervision and jurisdiction. In April, 1906, Mr. Des Anges succeeded the late David Van Cleaf as superintendent of the Montauk Steamboat Company and in 1915 became marine superintendent in charge of every department of marine work on the Long Island system. On March 16, 1926, he was appointed engineer of floating equipment. Mr. Des Anges was a member of many fraternal, civic and professional organizations, having been a member of the Society of Naval Architects and Marine Engineers since 1893 and an executive member of the Board of Steam Navigation of the Associated Marine Departments and of the New York Railroad Club.

WILLIAM GOODMAN, vice-president in charge of manufacturing of the Worthington Pump and Machinery Corporation, New York, died in the Manhattan Eye, Ear and Throat hospital in New York City on April 21. He was born in Cincinnati, Ohio, 52 years ago. After graduating from Harvard in 1896 he entered the engineering department of the Laidlow Dunn Gordon Company of Cincinnati and, when that organization was absorbed by the Worthington Corporation, Mr. Goodman became general manager of the Cincinnati branch. He was transferred to New York in 1918 as assistant to the vice president and four years later, was elected vice president. Under the supervision of Mr. Goodman, the Worthington Corporation's engineers developed the new double acting Diesel engine which the United States Shipping Board has adopted for several ships of the Diesel conversion program. The feather valve air compressor and other engineering devices were also developed under his direction. Mr. Goodman was on active duty in the Spanish-American War as an ensign in the Navy and during the World War offered his services as an engineer and was placed in charge of the manufacturing of munitions at the Worthington plant, Hazleton, Pa.

Wm. Goodman

Generated on 2024-09-12 14:02 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

The Month's Shipping and Shipbuilding News in Brief

Shipyard, Steamship and Port Activities and Other Notes of Interest in All Branches of the Marine Industries

American-Brown Boveri Corporation to Take Over Construction of Scout Cruiser Salt Lake City

BIDS were received and opened on Saturday, April 16, by Secretary of Navy Wilbur, Washington, D. C., for the completion of the construction of the scout cruiser *No. 25* (the *Salt Lake City*), and the propelling machinery, boilers, and auxiliaries for scout cruiser *No. 24* (the *Pensacola*), and one test boiler for scout cruisers *Nos. 24* and *25*. Three firms made replies to the proposal, the Newport News Shipbuilding and Drydock Company, Newport News, Va.; the Bethlehem Shipbuilding Corporation, Ltd., Bethlehem, Pa., and the American Brown Boveri Electric Corporation, Camden, N. J. The bids were called for on this contract on April 12, after the Navy Department cancelled the contracts entered into under date of July 9, 1926, with the William Cramp and Sons Ship and Engine Building Company, Philadelphia, Pa., for the construction.

The American Brown Boveri Electric Corporation agreed to complete the construction under the terms of the contract entered into with the Cramp Company, for the sum of $10,536,350.36, which figure represents the difference between the contract price for the work and the sum of money already paid to the Cramp organization for the work entered into, which is $433,691.64. The bid of the American Brown Boveri was accepted by Secretary Wilbur.

The keel of the *Salt Lake City* has not as yet been laid and the materials already assembled for the construction will be moved to the plant of the successful bidder at Camden, New Jersey, where the construction will be taken up.

The work will be done by the American Brown Boveri Electric Corporation under the same terms and specifications as were in force with the holder of the cancelled and forfeited contract.

Mount Vernon Reconditioning Plan Now Awaits Approval of Shipping Board

IT is understood that the Shipping Board has received the report of the Department of Maintenance and Repair, Captain R. D. Gatewood, manager, 45 Broadway, New York, on the proposed reconditioning of the liners *Mount Vernon* and *Agamemnon*. The plans under consideration and awaiting a decision by the Board include a proposal for the work to be carried out according to specifications prepared last spring by the Board itself and the proposal made by the Gibbs Brothers, Inc., naval architects of New York. It is understood that these two plans include four alternative methods of propulsion. It is not as yet known when action will be taken on the matter, but it is stated that immediately upon receiving approval of the commissioner, specifications will be issued to prospective bidders. Action will undoubtedly be taken within the very near future.

Shipping Board Proposes to Fit Out Twelve More Ships with Diesel Engines

COMMISSIONER BENSON has been authorized by the Shipping Board to submit recommendations for the Dieselization of 12 more steamships with a view to taking immediate action to let contracts for the work. Conversion of these ships will bring the Shipping Board's Diesel fleet up to 25 vessels. The board now has seven motorships in operation. All of these vessels as converted have proven themselves satisfactory.

The board also authorized the negotiation of contracts, subject to the board's approval, for three more Diesel engines contemplated in the original allotment of 12 vessels. A $400,000 contract for installing engines in the *Yomachichi* will be awarded to the Newport News Shipbuilding and Drydock Company, Newport News, Virginia; a $410,000 contract for the *West Gramma* will be awarded to the Bethlehem Shipbuilding Corporation, Ltd., Bethlehem, Pa., and a $436,000 contract will be awarded to the Todd Shipyards Corporation, New York, for Dieselizing the *Seminole*.

It is understood that the Shipping Board Department of Construction and Repair will issue specifications within a short time for the conversion of the final ship on the original program. The engines for this ship, which are now being built by the New London Ship and Engine Company, Groton, Conn., will be ready for a 30-day test in the next week or two and plans for the installation will follow closely after the tests have begun. It was originally intended to convert the steamship *Willscox*, but it is possible that another vessel, so far undetermined, will be converted instead at this time.

I. M. M. May Purchase Luckenbach Fleet

INFORMATION has been received that the International Mercantile Marine Company, New York, has opened negotiations with Edgar F. Luckenbach, president of the Luckenbach Line, for the purchase of his fleet. Although Mr. Luckenbach refused to affirm or deny the report, it was learned that he had expressed a willingness to sell if the prospective purchaser met his price. The Luckenbach Line controls a fleet of 20 freighters, aggregating approximately 160,000 gross tons.

Action Soon to Be Taken on Two Additional Ships for Panama-Pacific Line

WORD has been received that the International Mercantile Marine Company, New York, is getting plans in shape for the next two ships to be built for service by the Panama-Pacific fleet. The first vessel in the three-ship program of this company (the *California*), is now under construction at the Newport News Shipbuilding and Drydock Company plant, Newport News, Va.

It is understood that the next two vessels will follow the same general design, minor alterations only being made. It is believed that when the specifications are completed and bids asked that a number of the larger shipyards will be invited to submit proposals.

The principal dimensions of the *California* are, length 600 feet, breadth 80 feet, depth 52 feet; displacement when loaded 31,000 tons. She is equipped with turbo-electric drive of 18,000 horsepower. Steam is supplied by 12 watertube boilers, fitted to burn oil. The propelling machinery is being built by the General Electric Company, Schenectady, New York. The vessel has a sea speed of 18 knots.

Cramp Shipyard to End Shipbuilding Activities

THE William Cramp and Sons Ship and Engine Building Company, Philadelphia, Pa., has decided to discontinue its shipbuilding operations and turn its shipyard proper over for other activities with which the company is quite busy. The decision to end its shipbuilding work, the company announced, was due to the general curtailment of the naval construction program and the continued depression in merchant shipbuilding.

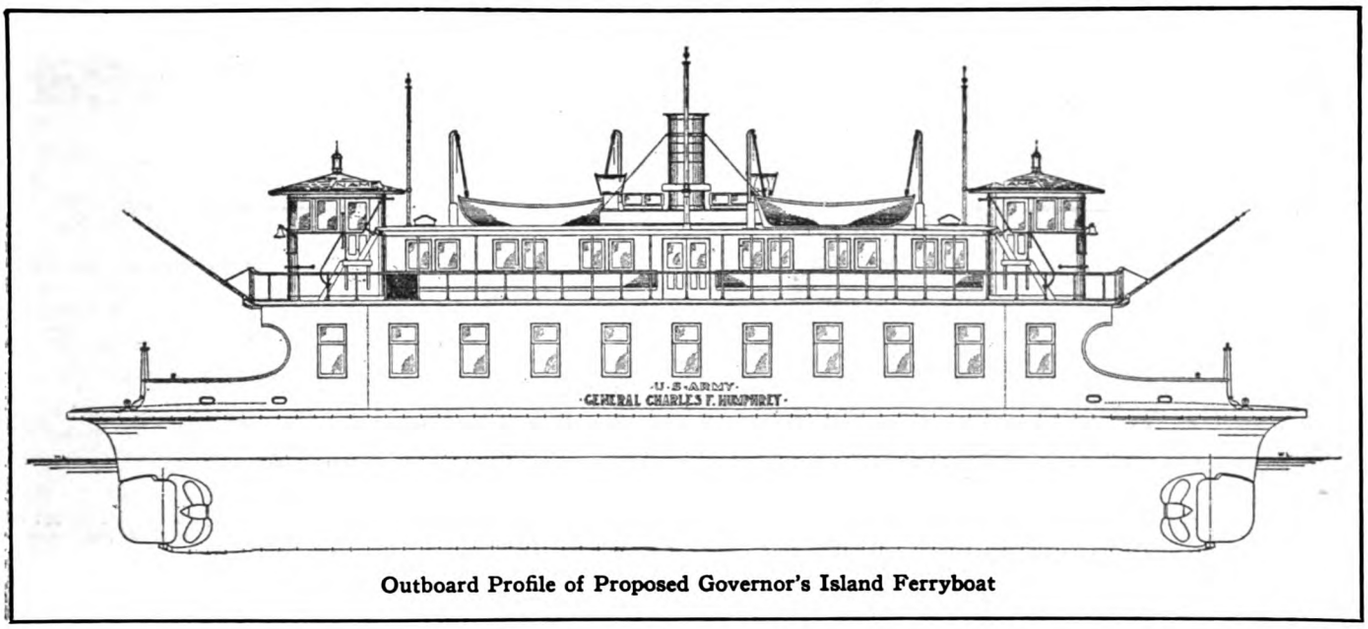
The Cramp Company is one of the oldest shipbuilding concerns in the United States. It was founded in 1830 by William Cramp. Members of his family were identified with the company up to 12 years ago when the holdings of the Charles H. Cramp estate was passed into other hands.

Work on the steamers *Malolo, Yarmouth* and *Evangeline*, now approaching completion at the Cramp yard, will be finished before the shipbuilding section of the plant closes down.

Sea Trials of M. S. City of Rayville

THE converted Shipping Board motorship *City of Rayville* was given her sea trials on April 27 in Hampton Roads, Virginia, after which she will be turned over to the Roosevelt Steamship Company, Inc., New York, operating the Atlantic Australian Line, to take on cargo for her maiden voyage to Australia, returning via India. The vessel is equipped with Busch-Sulzer single-acting engines

Generated on 2024-09-12 14:02 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Outboard Profile of Proposed Governor's Island Ferryboat

Construction Award of Six Scout Cruisers

SECRETARY of the Navy Wilbur, Washington, D. C., recently announced the award of contracts for six light cruisers of the 10,000-ton type authorized by the act of Congress of 1924. Four of the vessels are to be constructed by private shipyards and two will be built by United States navy yards on the Pacific coast.

The Bethlehem Shipbuilding Corporation, Ltd., Quincy, Mass., was awarded the contract for the construction of scout cruiser *No. 26*, at a price of $10,675,000 and 36 months' time.

The American Brown Boveri Electric Corporation, Camden, N. J., will construct *No. 27* for $10,815,000.

The Newport News Shipbuilding and Drydock Company, Newport News, Va., will construct *Nos. 30* and *31*, at a price of $10,480,000 each and 36 and 45 months' time.

The Navy Yard at Puget Sound will construct *No. 28* and the Navy Yard at Mare Island, Calif., will construct *No. 29*. The navy yards did not submit fixed bids, but stated estimated amounts for the construction costs.

General Engineering Yard to Recondition Two Ferryboats

A CONTRACT for the reconditioning of the ferryboats *San Francisco* and *Fernwood*, recently purchased from the Key System Transit Company by the Golden Gate Ferry Company, San Francisco, California, has been awarded to the General Engineering and Drydock Company, Alameda, Calif., for the sum of $160,000. The price submitted does not include any work on either of the vessels below the waterline or in the engine rooms.

The contract calls for the tearing out of all the passenger accommodations and rebuilding of the same so that 65 automobiles can be carried.

To put the two vessels into condition for the new service will cost the Golden Gate Company approximately $200,000, the engine repairs necessary running the contract price up to this figure. When completed, the vessels will be placed in service between San Francisco and Sausalito.

Bids for Portland Fireboats to Be Received May 5

PLANS and specifications for the construction of three new fireboats for the City of Portland were recently issued by C. A. Bigelow, commissioner of public affairs, Portland, Oregon, and bids will be received at Portland until May 5. The boats are to have a length overall 85 feet 11 inches; length at waterline 85 feet; length between perpendiculars 82 feet 6 inches; beam at deck molded 20 feet; beam at molded waterline 18 feet; depth molded at side 8 feet 6 inches; draft 5 feet 6 inches; extreme height of vessel above load waterline 12 feet 6 inches; capacity of fire pumps 8,000 gallons per minute at 200 pounds pressure. The vessel will have a speed of 18 to 20 miles an hour.

The new fireboats are to be equipped with two gasoline motors, clutch connected with the propellers and after pumps. Two independent gasoline motors, direct connected to the forward pumps, are to be installed, the motors to be arranged for pilot house control. The four pumps are to have a capacity of 2,000 gallons of water per minute at 200 pounds pressure each. There are to be three motors installed, one on the main deck forward, one on the main deck aft and one on the monitor platform amidships. Each vessel is to have a hose storage over the engine hatch for 2,500 lineal feet of hose.

Nashville Bridge Company to Build Two Barges

THE Nashville Bridge Company of Nashville, Tennessee, was recently awarded the contract for the construction of two 100 feet by 24 feet by 5 feet steel barges, bids for which were received by the United States Engineer Office, St. Louis, Mo., on March 18. The Nashville Bridge Company submitted the low bid of $16,050.

War Department Invites New Bids for Governors Island Ferryboat

NEW proposals will be received by the War Department, Office of the Quartermaster General, Washington, D. C., until May 2, 1927, and then opened, for the construction of a double-ended steel ferryboat for service in New York Harbor, Governor's Island. The vessel is to be named the *General Charles F. Humphrey*. The general dimensions of the ferryboat are as follows:

Length over guards—128 feet.
Length on 9-foot 6-inch waterline—118 feet.
Breadth over guards—44 feet.
Breadth of hull on 9-foot 6-inch waterline—34 feet.
Depth of hull at side, molded—14 feet 6 inches.
Depth of hull at center, amidships—15 feet 2 inches.
Draft in light service condition, above base—8 feet 6 inches.

Upon opening of the previous bids for this boat, it developed that all bids were slightly over the amount of the congressional appropriation, and it was later learned from the Bureau of the Budget that consent would not be given to allot funds from other sources to cover the small amount required by the increase over the amount appropriated. It was, therefore, necessary that the designs of the boat be redrawn of a somewhat smaller size, and many reductions made in engines and fittings, so that new bids could be invited on a smaller vessel.

The new vessel is to be propelled by a single or double acting, two or four cycle, solid or air injection, marine Diesel engine of 4, 5, 6 or 8 cylinders, designed to afford about 400 shaft horsepower at normal propeller revolutions, delivering the required horsepower on standard commercial grade fuel oil. One approved hand bilge pump, horizontal double-acting, 4-inch, brass-lined, with spring piston and metal valves is to be installed. A small oil-fired steam boiler of appropriate heating type is also to be installed on the vessel. This boiler is to be of steel of size and capacity to take care of the radiator capacity and provided with not less than 9 square feet of grate surface and not less than 275 square feet of heating surface.

An alternative proposal is asked for Diesel electric propelling machinery to con-

Generated on 2024-09-12 12:45 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

sist of two Diesel engines driving electric generators, the generators in turn driving electric motors on the propeller shafts. The Diesel engines are to be similar and the design can be for either single or double acting, 2 or 4 cycle, and with 4, 6 or 8 cylinders, with the purpose of securing 250 shaft horsepower per engine at a speed of revolution not deemed excessive. A system of either one 375 horsepower propelling motor or two 375 horsepower motors located at either end of the boat may be figured on.

The vessel is to be delivered to the War Department afloat at the shipbuilder's outfitting yard, complete in good condition and runing order, in all respects satisfactory to the department.

Specifications for Conversion of Tanker Chestnut Hill to Diesel Drive to Be Issued About May 15

PLANS and specifications are being prepared by Angelo Conti, naval architect of 11 Broadway, New York, for the conversion of the tanker *Chestnut Hill* to Diesel drive. This vessel was purchased some time ago by the Anglo-Chilean Consolidated Nitrate Corporation, New York. It is understood that specifications for the installation of machinery will be issued on or about May 15. The vessel was purchased from the Shipping Board with the understanding that she would be converted to a Diesel tanker within a year. This tanker was built in 1918 by the Pusey and Jones Company, at Gloucester, New Jersey. She has a length of 364.9 feet, a beam of 51 feet and a depth of 29.5 feet, with a capacity of 7,000 deadweight tons.

In order to obtain the earliest possible delivery of the converted vessel, the Anglo-Chilean Corporation purchased one 1,800-horsepower McIntosh and Seymour Diesel engine, and the hull conversion, engine foundations, tank arrangement and the like are being made to suit conditions imposed by this machinery. The engine is of six-cylinder, four-cycle type, having cylinder diameters of 29 inches and a stroke of 48 inches. The main engine will operate at 105 revolutions per minute giving the ship a sea speed of about 10¼ knots. Two three-cylinder, four-cycle McIntosh and Seymour auxiliary Diesel engines will also be installed. These engines have cylinder diameters of 13 inches with a stroke of 18 inches and each will be direct connected to 100-kilowatt three-wire system direct current 240-volt generators. Each engine will also be attached to an oversized compressor having an excess capacity of 160 cubic feet of free air per minute. These units are similar to the auxiliary installations made in the Shipping Board Diesel conversion program.

The original donkey boiler will be retained for heating cargo oil and miscellaneous purposes while the present steam pumps will be retained for intermittent operation and for port service. All of the auxiliaries which will be in use at sea will be electrically driven.

The *Chestnut Hill,* when converted, will be placed in service carrying oil between San Pedro, California and Tocapilla, Chile, to supply the 10,000-horsepower M. A. N. four-cycle Diesel engine plant of the Anglo-Chilean Corporation at that point with fuel.

Executive Committee of Marine Section of National Safety Council Holds Meeting in New York

THE executive committee of the marine section of the National Safety Council held a meeting at 17 Battery Place, New York, on April 21, with about 25 officers and members of the section present. Captain W. P. Kain, American Steamship Owners' Mutual P and I Association of New York, chairman of the marine section, presided.

Arthur M. Tode of the Texas Company, New York, chairman of the membership committee, outlined the work of the Texas Company in promoting safety on its ships. The accident prevention work of this company comes under Mr. Tode's direct charge and he outlined what had been done on the ships of this fleet over a period of six years. Charts have been developed by the marine department which make possible a complete and accurate record of all the accidents which occur. Two of these charts were shown which give yearly results in the deck department, engine department and stevedores' department as well as an analysis of the types of accidents occurring in both the large and the small fleets. Mr. Tode and his associates are developing other forms that will later be adaptable to practically any form of marine service. These charts when completed, will be available to any company desiring copies of them.

Captain Kain discussed a new catalogue of marine posters which was distributed to those present. The catalogue contains 63 miniature safety posters which are available to members for use on docks and ships. The entire matter of promoting the safety idea aboard ship, as well as in other lines of industry, is one of educating the men and continually keeping the thought before them of eliminating carelessness in carrying out their work. Captain G. Bartlett of the Cosmopolitan Shipping Company, New York, is doing excellent service as chairman of the bulletin committee in working out new posters which will be added from time to time to the marine list. In speaking before the committee Captain Bartlett suggested a wider use of the poster catalogue and a careful study of members in the location of bulletin boards on the ships and ashore where they will do the most good.

In order that the committee might understand better the work of the national organization, W. L. Wheeler, representative of the National Safety Council, described the various services offered and appealed to the members to take advantage of them. According to R. E. Prouty of the Aetna Life Insurance Company, New York, chairman of the program committee, an excellent list of speakers for the marine section in connection with the annual convention has been arranged. The convention will be held in September at the Hotel Stevens, Chicago.

Among others who spoke at the meeting, Captain Irving L. Evans, United States P and I Agency, Inc., New York, chairman of the research committee, discussed the recent legislation regarding employee compensation passed by Congress and the need of preparing statistics of accidents in the marine field on which any future federal action might be based. Such statistical data would be most valuable in compiling a safety code and the industry should be in a position to recommend the adoption of a code of this kind before the matter is brought up by Congress. Another important point brought out by Captain Evans was the importance of making compulsory the practice of physical examinations of all personnel before being signed on the articles of a ship. This practice would prevent unjust compensation claims being brought by seamen who are physically unfit before shipping and who later try to collect compensation to which they are not entitled. R. F. Hand of the Standard Oil of New Jersey, second vice chairman of the marine section, concluded the discussion at the meeting by emphasizing the importance of physical examinations and illustrated his point with incidents occurring in the conduct of his own department.

War Department Asks for Bids on Three Maneuver Boats

SEALED proposals were received by the War Department, United States Engineer, Pittsburgh, Pa., until 12 o'clock noon (Eastern Time), April 27, 1927, and then publicly opened, for furnishing all labor and materials and performing all work for furnishing and delivering three steel maneuver boats. The vessels are to have a molded length of 60 feet, molded beam of 22 feet and a molded depth of 4 feet.

A hoisting engine of the double cylinder non-reversing three-drum type, arranged for side lever control, is to be installed in each boat. The boiler is to be of the vertical firetube type and mounted on the engine frame. It is to be of a standard approved design, complying with all the requirements of the boiler code of the American Society of Mechanical Engineers. A 125-volt D. C. generator, direct connected to a steam turbine, compact and self-contained on one bed plate or frame and mounted on a structural steel foundation at least 2 feet above the deck level is also to be installed in each vessel and is to be capable of delivering 1½ kilowatts continuously without overheating. The steam pump is to be of the horizontal duplex packed piston type.

Unless otherwise specified all work is to be in accordance with the appropriated classification of the current Rules of the American Bureau of Shipping where applicable.

Diesel-Electric Tanker to Be Built Abroad for Atlantic Refining Company

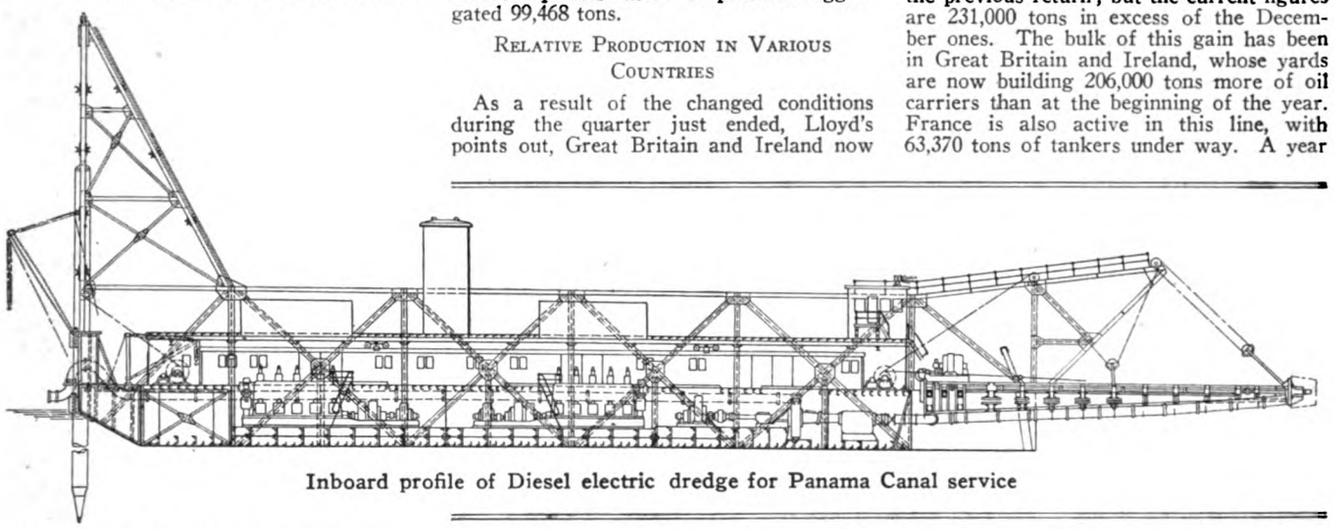
AN order for the construction of an oil tanker of 12,500 tons deadweight to be fitted with Diesel-electric propulsion, has been placed with the Scott Shipbuilding and Engineering Company, Greenock, Scotland, by the Atlantic Refining Company, Philadelphia, Pa. The Diesel engines, which are of the Carels-Ingersoll-Rand type will be built by the Carels in Ghent, Belgium, and will be the same design of oil engine as used in all the Atlantic Refining Company's Diesel-electric fleet. The electrical machinery will be built by the British Thomson-Houston Company, Ltd., of Rugby.

Generated on 2024-09-12 12:39 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Panama Canal Commission Awards 24-Inch Diesel Electric Suction Dredge to Ellicott Machine Corporation

THE General Purchasing Officer of the Panama Canal Commission, Washington, D. C., has awarded a contract to the Ellicott Machine Corporation, 1111 Bush street, Baltimore, Maryland, for the construction of one 24-inch Diesel-electric suction dredge complete in every respect, with the exception of crew's quarters, including spare parts and refrigerating machinery, at a price of $1,042,600.

The hull is to be 226 feet long, 50 feet beam and 14 feet deep and the dredge equipped with four 900-horsepower 4-cycle Fulton engines, type B. G., and Westinghouse generators and auxiliaries. Bids for the work were received and opened at Washington, D. C., on February 11. The vessel is to be delivered at Cristobal, Canal Zone.



Inboard profile of Diesel electric dredge for Panama Canal service

Lloyd's Quarterly Shipbuilding Returns

OVER six hundred thousand gross tons more of merchant vessels are now in course of construction throughout the world than at the beginning of this year, says a statement just issued by Lloyd's Register of Shipping, covering returns for all maritime countries, for the quarter ended March 31 last.

This sharp gain in tonnage on which work has been begun brings the world total to more than 2,500,000 gross tons for the first time since late in 1924, Lloyd's points out. Practically all the increase, however, has been due to three factors—Great Britain and Ireland, with a gain of 456,000 tons over the total at December 31 last; Germany, with an advance of 139,000 tons, and the United States, with 27,000 tons more than in the preceding quarter. The relative position is shown in the following table of comparison between the two quarterly periods, the figures being in gross tons:

	Mar. 31, 1927	Dec. 31, 1926
United States.....	179,325	151,635
Great Britain and Ireland	1,216,932	760,084
Germany	350,933	211,062
Other countries.....	822,674	810,246
World total.....	2,569,864	1,933,027

While French shipyards showed a gain of about 11,000 gross tons over the previous quarter, this was more than offset by the losses in the smaller maritime countries.

The increased work secured by the shipyards of Great Britain and Ireland represents a 60 percent advance over their total for the beginning of this year; and Germany's gain in percentage is even greater, being 66 percent; these figures comparing with an increase of 18 percent for the United States. Included in the current total for Great Britain and Ireland are 20,083 gross tons of work on which suspensions have been ordered; but in the December quarter these suspensions aggregated 99,468 tons.

Relative Production in Various Countries

As a result of the changed conditions during the quarter just ended, Lloyd's points out, Great Britain and Ireland now have 47 percent of the world's merchant ship production, as against only 39 percent at the beginning of this year, and their lead over their nearest competitor has grown from 549,000 gross tons to 866,000 tons.

While Great Britain and Ireland have increased their lead during the past quarter, there have been some changes in the relative ranking of the other countries. Italy, which stood second at the beginning of the year, is now third, having changed places with Germany, which now has a lead of 142,000 tons over the 208,000-ton total for Italian shipyards. The United States retains fourth place, but is less than 30,000 tons behind Italy. Holland, which stood fifth at the beginning of the year, is now sixth, with 133,000 tons building, as against 145,000 in the preceding quarter. France has moved up a peg to fifth place, advancing from 143,000 tons to 154,000. Russia again appears in the returns, being reported to have 73,440 tons under way, a gain of nearly 20,000 tons over the 54,000 building in the December quarter.

New Work Far Exceeds Launchings

Comparisons between the new work begun and tonnage launched during the quarter just ended are very marked. In the December quarter, construction begun throughout the world was only 14,000 gross tons in excess of the tonnage sent down the ways. In the three months ending with March 31, however, the margin of new work to replace that going towards completion was widened to 658,000 tons.

While the contrast was sharp in Great Britain and Ireland, where the lead of new work begun over tonnage launched grew from 83,000 gross tons in the December quarter to 450,000 tons in the quarter just ended; for the other maritime countries combined there was a reversal of conditions. For the last quarter of 1926, the launchings in these nations aggregated 68,000 tons more than the new work for the period. In the first quarter of 1927, however, new work totaled 208,000 tons more than tonnage launched. Of the 358,000 gross tons of new work begun outside of Great Britain and Ireland this year, 183,669 tons was in German shipyards.

Tankers

Another increase in the construction of tankers of 1,000 tons and over is shown by Lloyd's figures. The world total for the December quarter (602,846 tons) recorded a gain of 119,000 gross tons over the previous return; but the current figures are 231,000 tons in excess of the December ones. The bulk of this gain has been in Great Britain and Ireland, whose yards are now building 206,000 tons more of oil carriers than at the beginning of the year. France is also active in this line, with 63,370 tons of tankers under way. A year ago the tankers under construction throughout the world aggregated only 247,000 gross tons.

Motorships

Motorship construction, totaling 1,172,178 gross tons, also made a sharp gain during the first three months of this year, 266,000 gross tons in excess of the total for the previous quarter being reported by Lloyd's as under way. Italy, which has been active in building this type of vessel, shows a decrease of 28,000 gross tons; but this was much more than offset by a gain of 194,000 tons for Great Britain and Ireland, and of 100,000 tons for the other countries combined. Of the latter, Germany is now building 177,909 tons.

While only 37 percent of Great Britain and Ireland's present construction is of motor vessels, the other maritime countries combined are devoting 53 percent of their merchant shipbuilding program to this type. Of the world's production, however, 54 percent is composed of other than motorships.

Steam Reciprocating Engines

Lloyd's Register also gives returns showing the power of various types of marine engines being built or installed throughout the world. These show a decided advance in use of steam reciprocating engines, the indicated horsepower of which is 507,126, as compared with 365,213 at the beginning of this year. The indicated horsepower of oil engines shows an advance from 843,617 at December 31, last, to 918,536 at March 31. Little change, however, is recorded in the total shaft horsepower for steam turbines, the 487,225 figure at the opening of 1927 going only to 496,555 at the end of March. Previous quarters had shown a much sharper tendency to increasing use of turbines.

The increase noted in the use of steam reciprocating engines is due almost entirely to orders placed with the shipyards

Generated on 2024-09-12 12:32 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

of Great Britain and Ireland, the total of indicated horsepower for this type of propulsion, advancing from 220,223 at December 31, in those countries to 352,886 at March 31. For the other countries combined, the gain was only from 144,990 to 154,240.

For oil engines there was an advance in indicated horsepower in the same period in Great Britain and Ireland, from 291,512 to 320,131; while in other countries, the figures grew from 552,105 to 598,405. Italy now has oil engines building with a total power of 175,700.

STEAM TURBINES

In the shaft horsepower of steam turbines there was a slight decline in this period in Great Britain and Ireland, the 209,000 of December 31, comparing with 208,600 at March 31; while in other countries there was an advance from 278,255 at the end of December to 287,955 at the end of March.

It will be seen, therefore, that while reciprocating engines lead in the present ship construction in Great Britain and Ireland, they are at the bottom of the list in the output of other countries, which are devoting their attention chiefly to oil engines, and secondarily to turbines. In Great Britain and Ireland, oil engines come second and turbines play the smallest part in the program at present.

The total work now in the hands of the world's shipbuilders is about 560,000 gross tons more than it was at this time last year. At that time the world total was 2,010,206 tons, of which 843,000 tons was being constructed by Great Britain and Ireland; 117,000 tons by the United States; 298,000 tons by Italy, and 216,000 by Germany. All these countries, with the exception of Italy, are now building a greater amount of tonnage.

S.S. City of Columbus to Be Fitted with New Boilers

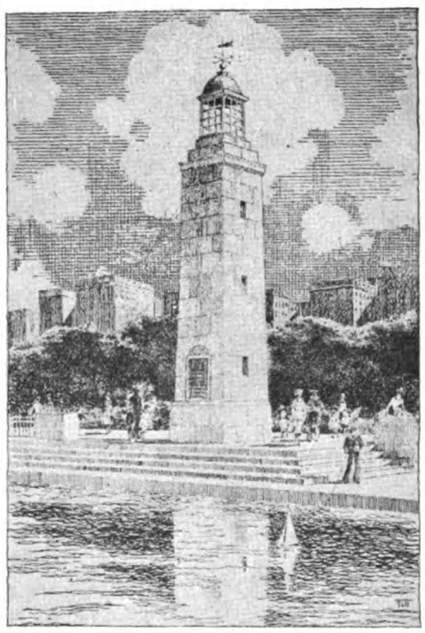
PLANS and specifications have been issued by the Eastern Steamship Company, Boston, Mass., for the reboilering of the steamship *City of Columbus*. The date on which bids will be received has not as yet been determined. The vessel is now equipped with four return tubular boilers having a working pressure of 180 pounds per square inch. It is believed that the ship will be refitted with Scotch boilers. Information of the specifications is not available for publication at this time. The engines are of the three-cylinder triple expansion type, developing 5,000 indicated horsepower.

Capstaff-Hunter Awarded Diesel Repairs

A CONTRACT for making and installing a new crank shaft for the motorship *Munmotor*, operated by the Munson Line, New York, has been awarded to the Capstaff-Hunter Construction Works, Inc., Hoboken, N. J.

Proposals Asked for Twelve Barges

THE Mississippi River Commission, First and Second Districts, Memphis, Tenn., will receive sealed proposals until 11:00 A. M., May 14, 1927, for constructing 12 steel barges. Further information may be obtained on application.



Artist's sketch of McKay memorial

McKay Memorial Planned

AN imposing memorial to Donald McKay, famous builder of the clipper ship *Flying Cloud*, is planned at East Boston, Mass., by a committee composed of more than three score distinguished Americans. An architect's drawing of the proposed memorial is shown in the illustration.

Donald McKay, born in 1810, was an unusual combination of artist and scientist, of idealist and practical man of business. His ships were alive to him, and when he was permitted by their owners to name them, he invariably chose names which were fitting and beautiful. His masterpiece, the *Flying Cloud*, was the fastest long distance sailing vessel the world has ever seen.

McKay's supremacy over any other shipbuilder is shown conclusively by records. The sailing vessels of the world made only 22 passages from an Atlantic port to San Francisco, around Cape Horn, in less than 100 days. Of these 22 shortest passages, several were made by McKay ships. And of the seven McKay passages, two of the fastest ever recorded for any sailing vessel were made by the *Flying Cloud*, which twice made the long trip in 89 days—a record never surpassed by any sailing vessel.

The McKay memorial committee includes such well known persons as Franklin D. Roosevelt, Charles Francis Adams, Rear Admiral W. S. Sims, Robert Grant, Guy Lowell and Roger Griswold.

Electrical Deck Machinery for M. S. District of Columbia

THE Allen Cunningham Company, Inc., Seattle, Washington, has received the contract for all the electric deck machinery to be installed in the tanker *District of Columbia*, a 16,000-ton tanker recently purchased from the United States Shipping Board by the Standard Oil Company of California. The tanker is now in San Francisco being converted from a steamship to a Diesel-electric vessel. The price involved was not given out.

Clyde Liner Shawnee Launched

THE Clyde liner *Shawnee*, which was launched on April 18, at the Newport News Shipbuilding & Dry Dock Company yard, Newport News, Va., completed the $14,000,000 program of ship construction for the New York-Carolina-Florida service of the Clyde Line. Six vessels for this service have been built having an aggregate of 45,000 tons.

The *Shawnee* is similar in design to her sister ship, the *Iroquois*, which was launched last December. The vessel has a length of 408 feet; beam, 62 feet; loaded draft, 20 feet 6 inches. She has two smokestacks, a bulbous bow and cruiser stern. The twin-screw reduction gear turbine machinery installed in the *Shawnee* develops 10,200 horsepower.

All of the new vessels for this fleet were designed by Theodore Ferris, naval architect, 30 Church street, New York.

Beacon Oil Company Orders Tanker Abroad

THE Beacon Oil Company, Boston, Mass., recently purchased a 11,300-deadweight ton tanker being constructed at the yards of the Palmer Shipbuilding and Iron Company, Hebburn-on-Tyne. The vessel is 450 feet long, 59 feet beam and has a molded depth of 34 feet. It is expected that the vessel will be ready for sea this July. She will be named the *Beconco* and registered under the United States flag. The company proposes using the vessel in general oil trades.

Howard Shipyard Awarded Contract for Twenty Barges

A CONTRACT for the construction of 20 small steel barges was recently awarded to the Howard Shipwards and Dock Company, Jeffersonville, Ind., by the United States Engineer Office War Department, Room 428 Customhouse, St. Louis, Missouri, at a price of $47,000 and 125 days' time. Bids for the work were received at the St. Louis office on March 25. The barges are to be 55 feet by 15 feet by 3 feet.

Tanker Tuxpanoil Diesel Conversion Specifications Issued

PRELIMINARY specifications covering the conversion of the tanker *Tuxpanoil* to Diesel drive have been issued to shipyards by Charles E. Ross, naval architect of 16 Exchange Place, New York. Proposals for the work will be received within a short time, although no definite date has been given out. The *Tuxpanoil* was purchased April 22, 1926, by the Oil Transport Company of Baltimore from the Merchant Fleet Corporation.

Repairs to Dredge Barnard

THE Merrill-Stevens Drydock and Repair Company, Jacksonville, Fla., has been awarded the contract for repairs on the government dredge *Barnard* at a price of approximately $30,000. The work on the dredge, which is to be stationed at the mouth of the St. Johns river, calls for a complete overhauling of the vessel. The boat was formerly stationed at Tampa.

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Ship Construction and Repair Bids

S.S. West Calumb Repairs

THE United States Shipping Board recently awarded a contract for repairs to the steamship *West Calumb* to the New York Harbor Drydock Company, Inc., New York, at a price of $8,995.20. Other tenders received were:

Name	Price
Morse Drydock and Repair Company	$9,182.60
Robins Drydock and Repair Company.	10,588.70

Bids for Repairs to S.S. Pandsay

THE United States Shipping Board, New York, received and opened tenders on Tuesday, April 12, for repairs to the steamship *Pandsay*, with the following results:

Name	Price
Robins Drydock and Repair Company..	$6,597
Morse Drydock and Repair Company....	6,648
Theodore A. Crane's Sons Company....	7,364

No award has as yet been announced.

Repair Bid for S.S. Gladyses

THE W. and A. Fletcher Company, Hoboken, New Jersey, was awarded the contract for repairs to the steamship *Gladyses*, at a price of $16,000, bids for which were received at New York by the Shipping Board on Tuesday, April 19. Other tenders received for the work include:

Morse Drydock and Repair Company..	$17,824
James Shewan & Sons, Inc.....	22,444
Tietjen & Lang Drydock Company.....	23,007

Staten Island Yard to Repair S.S. H. M. Flagler

WITH a price of $21,242, the Staten Island Shipbuilding Company, Staten Island, New York, was successful bidder for repairs to the Standard Oil of New Jersey steamship *H. M. Flagler*, bids for which were recently opened. Two other bids were received for the work as follows:

Todd Shipyards Corporation.....	$21,590
Morse Drydock and Repair Company..	23,270

S.S. Caddo to Be Repaired by Todd Shipyards Corp.

A CONTRACT for repairs to the Standard Oil of New Jersey steamship *Caddo* has been awarded to the Todd Shipyards Corporation, New York, at a price of $31,317, bids for which were received at New York on Tuesday, April 19. Other tenders received for the work include:

W. & A. Fletcher Company.....	$36,000
Morse Drydock and Repair Company..	36,498

S.S. Invincible Contract Awarded to New York Harbor D.D. Co.

THE New York Harbor Drydock Company, Inc., New York, was successful bidder with a price of $6,412 for repairs to the Shipping Board steamship *Invincible*, bids for which were received at New York recently. Other proposals submitted include:

Name	Price
W. and A. Fletcher Company.... ..	$7,387
Morse Drydock and Repair Company...	8,834
Theodore A. Crane's Sons Company.....	9,000
Robins Drydock and Repair Company....	9,104

Morse Yard to Repair Steamship Niobe

THE Morse Drydock and Repair Company, Brooklyn, New York, has been awarded the contract for repairs to the steamship *Niobe* of the Standard Oil Company of New Jersey, at a price of $25,527, bids for which were received at New York on April 14. Two other tenders were received for the work as follows:

Name	Price
Staten Island Shipbuilding Company...	$27,296
Robins Drydock and Repair Company..	27,310

S.S. Livingston Roe Goes to Robins Yard for Repair

THE Standard Oil Company of New Jersey (New York) has awarded a contract to the Robins Drydock and Repair Company, Brooklyn, New York, for repairs to the steamship *Livingston Roe*, at a price of $13,194. Other bids received for the work were:

Name	Price
Morse Drydock and Repair Company...	$13,554
Staten Island Shipbuilding Company..	14,235
New York Harbor Drydock Company, Inc.	14,995

S.S. Fred W. Weller to Be Repaired by Morse Drydock Company

A CONTRACT for repairs to the steamship *Fred W. Weller* has been awarded to the Morse Drydock and Repair Company, Brooklyn, New York, at a price of $10,936, bids for which were received at New York recently, by the Standard Oil Company of New Jersey. One other bid was received from the Robins Drydock and Repair Company, Brooklyn, New York, at $12,580.

Bids Submitted for Repairs to S.S. Charles Pratt

THE Standard Oil Company of New Jersey (New York) recently opened bids for the repairs to the steamship *Charles Pratt*. Proposals received for the work were as follows:

Name	Price
Robins Drydock and Repair Company..	$66,680
New York Harbor Drydock Company, Inc., and Staten Island Shipbuilding Company	83,396
Morse Drydock and Repair Company..	89,180

The award has not as yet been made.

Fletcher Yard Low Bidder for S.S. Chincha Repairs

WITH a price of $5,600, the W. and A. Fletcher Company, Hoboken, New Jersey, was low bidder for repairs to the steamship *Chincha* of the Planet Line, Inc., 39 Cortlandt street, New York City, bids for which were received at New York on Tuesday, April 5. Other proposals received for the work were:

Name	Price
Tietjen and Lang Drydock Company....	$7,258
Robins Drydock and Repair Company....	7,475
Todd Shipyards Corporation.....	7,550
Morse Drydock and Repair Company....	8,185

The award has not as yet been made.

S.S. George H. Jones to Be Repaired by New York Harbor Co.

THE New York Harbor Drydock Company, Inc., New York, has received the contract for repairs to the Standard Oil of New Jersey steamship *George H. Jones* at a price of $17,459, bids for which were received at New York on April 13. Other proposals submitted include the following:

Name	Price
Staten Island Shipbuilding Company....	$18,104
Todd Shipyards Corporation.....	19,275
Morse Drydock and Repair Company..	23,256

S.S. Belle Pline to Be Repaired at Morse Drydock Company Yard

THE Morse Drydock and Repair Company, Brooklyn, New York, was recently awarded a contract by the United States Shipping Board for repairs to the steamship *Belle Pline*, at a price of $6,485. Three other tenders for the work were received, which include:

Name	Price
W. and A. Fletcher Company.....	$8,700
Robins Drydock and Repair Company..	8,779
New York Harbor Drydock Company, Inc.	10,975

Bids Opened Recently for Construction of Eight Carfloats

BIDS were opened on Friday, April 22, at the marine department of the Pennsylvania Railroad, Philadelphia, Pa., for the construction of eight carfloats of various sizes. Two of these carfloats, which have a length of 330 feet, will have a capacity for 16 cars. Four floats, having a length of 250 feet, will be of the platform type with two tracks. The remaining two floats, having a length of 185 feet, will be for eight cars each.

Bids Received by U. S. Engineers for Construction of 20 Barges

TENDERS were received and opened at the United States Engineer Office, War Department, Room 428 Customhouse, St. Louis, Missouri, on March 25, for the construction of 20 small steel barges, 55 feet by 16 feet by 3 feet, with the following results:

Name	Price	Days
Howard Shipyards and Dock Company	$47,000	125
Dravo Contracting Company....	54,500	125
Rock Island Arsenal.....	55,760	180
Midland Barge Company.....	56,000	160
St. Louis Structural Steel Company	57,400	210
Nashville Bridge Company.....	58,480	150
Zier Boiler and Sheet Iron Company	67,000	270
American Bridge Company.....	68,500	180

Howard Shipyards received the contract

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Bids Received for Dump Scow Repair

THE New York City Street Cleaning Department recently received bids for repairs to the *Dumper N*, with the following results:

Name	Price
National Drydock and Repair Company, Inc.	$6,990
James Tregarthen and Sons Company, Inc.	7,083
Ira S. Bushey and Sons, Inc.	7,162
Jakobson and Peterson, Inc.	7,195
John W. Sullivan	7,843
Todd Shipyards Corporation	8,000
Morse Drydock and Repair Company	9,440

The contract has not as yet been awarded.

Deck Scow Repairs

A CONTRACT for repairs to the deck scow *George S. Shultz* has been awarded to the Morse Drydock and Repair Company, Brooklyn, New York, at a price of $4,880 and 14 days' time. The bids for work were received on Thursday, April 14, by Theodore E. De Mars, marine surveyor of 83 Maiden Lane, New York. Other tenders received were:

Name	Price	Days
Tietjen & Lang Drydock Company	$4,900	12
Jersey City Drydock Company	5,175	15
Morris Basin Works	5,264	19
National Drydock and Repair Company, Inc.	5,450	20

New York Harbor Company to Repair S.S. Half Moon

THE Standard Oil of New Jersey (New York), recently received bids for the repairs to the steamship *Half Moon*, and awarded the contract to the New York Harbor Drydock Company, Inc., at a price of $38,202 and 26 days' time. Other bids received include:

Name	Price	Days
Morse Drydock and Repair Company	$39,214	24
Staten Island Shipbuilding Company	41,200	25
Theodore A. Crane's Sons Company	43,334	28
Robins Drydock and Repair Company	65,216	35

S.S. Coastwise Goes to Newport News Yard for Repairs

THE Newport News Shipbuilding and Drydock Company, Newport News, Virginia, has been awarded a contract for repairs to the steamship *Coastwise*, owned by the Coastwise Transportation, Boston, Mass., at a price of $34,900 and 18 days' time. Several other proposals received for the work were as follows:

Name	Price	Days
Morse Drydock and Repair Company	$33,650	25
W. & A. Fletcher Company	34,200	28
Atlantic Basin Iron Works	38,485	25
Robins Drydock & Repair Company	$39,620	25
Bethlehem Shipbuilding Corporation, Ltd.	44,150	14

S.S. Hilton Repair Bids Received Thursday

BIDS were opened on April 14 by the A. H. Bull Steamship Company, New York, covering repairs to the steamship *Hilton*. Ten shipyards submitted estimates for the work but, because of the price involved, none of the bids was accepted. Specifications were reissued with minor changes and new bids taken Thursday, April 14, with the following results:

Name	Price
New York Harbor Drydock Company, Inc.	$21,775
Morse Drydock and Repair Company	22,573
Tietjen and Lang Drydock Company	28,503

No award has as yet been announced.

New York Harbor D. D. Co. Gets Contract for S.S. Higho Repairs

THE New York Harbor Drydock Company, Inc., New York, was successful bidder for repairs to the United States Shipping Board steamer *Higho* at a price of $7,979, bids for which were recently received at New York. Five other bids were received for the work as follows:

Name	Price
Morse Drydock and Repair Company	$8,283
Robins Drydock and Repair Company	9,950
W. and A. Fletcher Company	10,260
James Shewan and Sons, Inc.	11,444
Staten Island Shipbuilding Company	12,607

W. and A. Fletcher to Repair the S.S. Milwaukee Bridge

WITH a price of $21,074, the W. and A. Fletcher Company, Hoboken, New Jersey, was successful bidder for repairs to the steamship *Milwaukee Bridge* of the Matson Navigation Company (San Francisco, California), bids for which were received at the office of the United States Shipping Board, New York, recently. Other bids received were as follows:

Name	Price
Morse Drydock and Repair Company	$24,822
Tietjen and Lang Drydock Company	28,700
New York Harbor Drydock Company Inc.	29,884
James Shewan and Sons, Inc.	31,900

Repair Bids for Lighter Raleigh

THE Ledo Lighterage Company, New York, received tenders recently for repairs to the lighter *Raleigh*. Contract for the work has not as yet been awarded. The bids received are as follows:

Name	Price	Days
Morse Drydock and Repair Company	$12,264	22
National Drydock and Repair Company, Inc.	24,500	40
Frank McWilliams, Inc.	26,380	45
Staten Island Shipbuilding Company	27,480	45
Tietjen and Lang Drydock Company	27,878	48
Theodore A. Crane's Sons Company	27,900	47

Transfer Barge No. 17 Awarded to Morse Drydock Co.

THE Morse Drydock and Repair Company, Brooklyn, New York, has been awarded a contract for repairs to the New York, New Haven and Hartford transfer barge *No. 17*, at a price of $6,632 and 15 days' time, bids for which were recently received at New York. Other tenders received are:

Name	Price	Days
Theodore A. Crane's Sons Company	$6,840	18
Todd Shipyards Corporation	8,263	17
Tietjen and Lang Drydock Company	8,300	16
James Shewan and Sons, Inc.	8,444	12
Staten Island Shipbuilding Company	10,128	16

Fletcher Yard Low Bidder for S.S. Zarembo Work

WITH a price of $16,414, the W. and A. Fletcher Company, Hoboken, N. J., submitted the lowest proposal for repairs to the United States Shipping Board steamship *Zarembo*, bids for which were received at New York, on Tuesday, April 12. Other bids received were as follows:

Name	Price
Staten Island Shipbuilding Company	$16,581
New York Harbor Drydock Company, Inc.	16,995
Theodore A. Crane's Sons Company	18,027
Tietjen & Lang Drydock Company	18,758
Morse Drydock and Repair Company	19,223
Federal Shipbuilding Company	24,955
James Shewan & Sons, Inc.	20,978

No award has as yet been announced.

S.S. Illinois Repairs

TENDERS were received and opened at New York on Tuesday, April 5, for repairs to the steamship *Illinois* of the Texas Company, 17 Battery place, New York, with the following results:

Name	Price	Days
Robins Drydock and Repair Company	$6,437	6
W. and A. Fletcher Company	7,131	9
Staten Island Shipbuilding Company	7,347	7
New York Harbor Drydock Company, Inc.	7,995	8
Morse Drydock and Repair Company	9,126	9

The award has not as yet been made. Several prices were submitted on a number of miscellaneous items which were not figured in the totals.

Bids for Converting Barge to Asphalt Carrier

BIDS were received recently for the conversion of the barge *Dykes* to an asphalt carrier. Plans and specifications were prepared by Kindlund and Drake, naval architects, 17 Battery place, New York City, and bids were opened on April 6. The barge, which was originally owned by the Hedger Transportation Company, 25 Broadway, New York, was sold recently to the Barber Asphalt Company. No award has as yet been made for the work. The bids received are as follows:

Name	Price	Days
W. and A. Fletcher Company	$92,000	60
Staten Island Shipbuilding Company	99,725	70
Tietjen and Lang Drydock Company	110,560	60
Morse Drydock and Repair Company	111,394	75
Robins Drydock and Repair Company	114,700	65
Todd Shipyards Corporation	115,250	67
Federal Shipbuilding Company	119,400	75
James Shewan and Sons, Inc.	139,900	90

Federal Telegraph Company to Supply Radio Service to Swayne & Hoyt Fleet

SWAYNE & HOYT, INC., San Francisco, California, have awarded to the Federal Telegraph Company the business of handling the radio service on its entire fleet of 10 vessels, including the new ship *Point Montara*, formerly the *Federal Bridge*, recently purchased from the Shipping Board. The Federal Telegraph Company's east coast marine service has been extended to include the port of New Orleans by special arrangement. W. R. Drummey is representative there for the radio company.

Generated on 2024-09-12 12:30 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Notes from the Great Lakes

American Shipbuilding Company to Build Oil Tanker for the Standard Oil Co. of Indiana

THE Standard Oil Company of Indiana has awarded a contract for the construction of an oil tanker to the Lorain yard of the American Shipbuilding Company. The tanker is to have a length of 390 feet, beam of 52 feet and a depth of 20 feet, with a carrying capacity of 2,000,000 gallons. It is understood that the vessel is to be equipped with two McIntosh and Seymour engines, developing 900 horsepower. Bids for the work were scheduled to be opened March 7, but they were postponed for another week. The price involved for this work was not given out.

Riter Conley Company to Build Forty Hopper Barges for Pittsburgh S.S. Co.

THE Pittsburgh Coal Company has awarded a contract to the Riter Conley Company, Pittsburgh, Pennsylvania, for the construction of 40 hopper type coal-carrying barges. The new vessels are to be 175 feet long, 26 feet wide and 11 feet deep. The Pittsburgh Company has 30 similar barges in operation and contracts for 35 more will probably be awarded shortly. Forty wooden barges now used by the company will be replaced by steel vessels.

Otis Steel Company to Operate Fleet on the Lakes

THE Otis Steel Company, of Cleveland, plans to put into operation a lake fleet to move the company's finished products to Detroit and other Great Lakes automobile manufacturing centers. E. J. Kulas, president of the company, said the plan will save heavy freight charges now paid. He said plans for rebuilding the company's docks in the Cuyahoga river, Cleveland, so they will take care of direct shipping are under way. The shipments will include automobile full finish body sheets and hot and cold rolled strips for auto fenders. He said that $2.00 a ton freight charges can be saved by the water route. This will be the first move a Cleveland maker of finished steel has undertaken to develop an all water haul between Cleveland and Detroit.

Great Lakes Transit Vessels to Call at Windsor, Can.

THE Great Lakes Transit Corporation has announced that Windsor, Canada, will be made a port of call this season, through an arrangement with the Canadian Pacific Railway. This will give its vessels participation in transatlantic commerce through the ports of Montreal and Quebec, as well as the movement of greatly increased freight traffic from New England territory, over the transit concern's routes to various parts of the United States as far west as the Pacific Coast.

Pere Marquette Railroad Awards Carferry Contract to Manitowoc Shipbuilding Company

A CONTRACT for the construction of a twin screw steel carferry for the Pere Marquette Railroad, Detroit, Michigan, has been awarded to the Manitowoc Shipbuilding Corporation, Manitowoc, Wisconsin. The boat is to have a length overall 400 feet; length between perpendiculars 372 feet; beam, molded, 53 feet, beam overall approximately 53 feet 6 inches; depth, molded, 22 feet; draft of water, maximum mean loaded 16 feet. The vessel will have one complete deck, three tracks, each holding nine 40-foot cars. The price involved was not made public.

Wisconsin Bridge Company to Build Two Pile Driver Barges

A CONTRACT for the construction of two 90-foot pile driver barges to be built under the Ellis channel system of steel hull construction has been placed with the Wisconsin Bridge Company by Edward T. Gillen of Milwaukee, Wis. These barges are to be duplicates of the Ellis barge built for Mr. Gillen last fall by the Wisconsin Bridge Company. The same company is doing the work on the two new barges which will be ready for launching shortly. The price involved was not given out.

New C. & B. Terminal at Buffalo

WITH the beginning of harbor improvements at Buffalo to cost $350,000 and authorized March 30, by the state of New York, the Cleveland & Buffalo Transit Company will begin the erection there of port terminal facilities expected to cost in excess of $1,000,000. The work begun this spring will be completed with the opening of navigation in 1928.

The new terminal will be similar in design to the C. & B. E. 9th street terminal in Cleveland. It lies within 2,000 feet of Main street, the main business artery of Buffalo.

New Passenger Line

THE Pelee Transportation Company will open Lake Erie traffic on May 15. The company will operate boats between the island and Cleveland and Toledo. The first vessel to be put into service will have a trip capacity of 1930 persons and can carry 45 automobiles. Jacob Baker is general manager of the new company which expects to do a big business because of the new liquor regulations in Canada.

The Pelee Transportation Company was formed on April 16 by P. J. Mulligan, George D. Kelley, F. C. Harris, M. A. Friedman and others of Cleveland and is an Ohio corporation.

Lake Yards Having Busy Season

EIGHT new steel freighters, seven destined for hauling ore, coal and grain, will be added to the Great Lakes fleets this season—the greatest addition to the fleet in several years.

George A. Marr, secretary of the Lake Carriers' Association, said the aggregate cost of these giant freighters will exceed $7,000,000. The eighth, a self-unloading ship, will have the largest cargo capacity of any ship on the lakes, excepting the *Lemyone*, which is the pride of the Canadian fleet owners.

The Lorain yards of the American Shipbuilding Company are working feverishly on five of these large ships. This is the most pretentious program of shipbuilding undertaken since the war, and is led by the Interlake Steamship Company, a subsidiary of the Cleveland firm of Pickands' Mather and Company.

The Lorain yards will soon turn out the largest ore carrying vessel on the lakes. She will be 630 feet long, 65 feet beam and 34 feet deep, and, with a 20-foot draft, will be able to carry 13,800 tons of ore. She will be launched in a few weeks.

The stone trade vessel being built at the same yards for the Bradley Transportation Company will be a self unloader able to discharge her cargo at any point where there is enough draft to accommodate the vessel.

Considerable repair work is also being rushed at all lake ship yards, including those at Detroit.

Ore and Coal Rates Fixed

THE season's rates for iron ore, coal and vessel fuel were practically fixed on April 18, when it was learned that coverages had been made which will establish the carriage charge in ore and coal for 1927.

Several of the largest shippers of ore, have contracted at last year's figure or 70 cents from the head of Lake Superior, including Ashland. Several vesselmen confirmed the report admitting such contracts existed.

While there was no definite information obtainable regarding rates from other points it is thought that since the rate from the head of Superior is the same as last year that other rates will also be maintained at last year's figure. These are: From Marquette, 63 cents; from Escanaba to Lake Erie, 52½ cents, and from Escanaba to ports on Lake Michigan, 42 cents.

The rate on iron ore this year was determined much earlier than last year. The season was well under way in 1926 before there was any rate announcement.

Following announcement of the ore rate it was asserted that two of the larger shippers of lake coal had covered their season's requirements of vessel tonnage on a basis of 40 cents to Duluth and 50 cents to Milwaukee, with the usual allowance to fast plants for guaranteed dispatch. This rate also is the same as last year.

After this information had been given out one company announced that it had closed on nearly 3,000,000 tons at this rate. It was also said that car dumper fuel price to vessels taking cargo coal will be $4.75 per ton, or unchanged from last year's price.

The Pittsburgh Coal Company also announced for this season a price of $5.50 per ton for vessel fuel at its fuel docks at Sandwich, Ontario, and Lime Island, Mich., and from their fuel lighters at Cleveland and Ashtabula, which is in line with the previous season's price.

Generated on 2024-09-12 12:33 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Canada Steamship Lines Fleet

THE Canada Steamship Lines, Ltd., this season will have a combined fleet of 107 vessels. The company recently changed the names of 48 of its ships. Four new vessels are added. They are the *City of Kingston, City of Toronto, City of Montreal* and *City of Hamilton.*

The names of the vessels, their type and location and the names of the first engineers are as follows:

UPPER LAKE BULK FREIGHTERS

Steamer	Chief Engineer
Lemoyne	D. Sinclair
Donnacona	Jas. McGregor
Gleneagles	G. Price
Ashcroft	H. Young
Hagarty	I. J. Boynton
Westmount	C. Leriche
Emperor	G. N. Smith
Osler	R. R. Foote
Mid. Prince	J. A. Pickard
Goderich	P. Eagles
Prescott	W. C. Spencer
Collingwood	H. J. Jack
Brentwood	L. E. Spencer
Midland King	J. G. McHattie
Valcartier	J. McChristie
Martian	H. Myler
Maplecourt	James Kirk
Portsmouth	M. Deiman
Huguenot	J. B. Polding
Sarnian	E. A. Prince
Saskatchewan	R. Sinclair

UPPER LAKE PACKAGE FREIGHTERS

Renvoyle	I. Silverthorne
Renfrew	M. Manners

SELF-UNLOADING COAL CARRIERS

Gleneg	T. W. Verity
Collier No. 1	J. J. Dove

BARGE

Glenbogie	F. E. Stewart

NO. NAV. DIV. PASSENGER

Noronic	S. Brisbin
Hamonic	J. W. McLeod
Huronic	H. H. Moore
Thousand Islander	L. Black

WESTERN DIVISION PASSENGER

Kingston	G. MacDonald
Toronto	J. F. Henry
Cayuga	W. Taylor
Chippewa	J. M. Kennedy
Corona	C. Kniffen
Macassa	J. A. Gunn
Cape Trinity	A. Chayer
Rapids King	J. G. McKian

EASTERN DIVISION PASSENGER

St. Lawrence	N. Peloquin
Richelieu	J. E. Kane
Quebec	O. Bonin
Saguenay	G. Gagnon, Sr.
Cape Eternity	N. Crepeau
Cape Diamond	A. Pageau
Rapids Prince	G. M. Hazlett
Rapids Queen	W. Hazlett
Trois Rivieres	E. Lenneville
Turbinia	D. J. Leslie
Louis Philippe (ferry)	J. Matte

PACKAGE FREIGHTERS

Selkirk	D. Simons
Winnipeg	J. Douglas
Lethbridge	A. E. Kennedy
Kamloops	I. A. Hawman
Calgarian	F. Lumley
Canadian	A. Norris
Beaverton	H. Paus
Edmonton	I. MacDonald
Kenora	R. W. Howes
C. of Kingston	M. J. O'Brien
C. of Toronto	M. J. Sherman
C. of Montreal	Wm. Casper
C. of Hamilton	S. Ashie
C. of Windsor	Pas. Dyson
C. Walkerville	J. Brooks
Arvida	J. Hamelin

LOWER LAKE BULK FREIGHTERS

Winona	R. Wilkinson
Knowlton	A. E. House
Sherbrooke	V. Parker
Magog	J. Bennett
Granby	M. Parry
Kinderslee	Geo. Fleming
Anticosti	G. Reid
Elgin	W. Goodwin
Lennox	R. Isbester
Waterloo	A. J. O'Brien
Hastings	F. Mailhot
Norfolk	E. Fleming
Dundas	J. Hamelin
Lanark	T. Nichols
Oxford	W. Coulson
Simcoe	J. Smith
Thunder Bay	Jas. Whittle
Meaford	T. Aussant
Barrie	W. Hurder
Kipawa	M. J.
Penetang	U. Hamelin
Vinmount	George Clark
Mapleton	J. H. Louden
Mapleheath	C. Barlow
Acadian	J. King
Maplehill	M. Rankin
Hamilton	J. R. Naudie
Brignogan	O. D. Thurston
Camrose	W. Coburn
Chatsworth	O. Burrison
Chandler	F. Bonnell
Chapleau	J. Gilbert
Canmore	R. M. Bonnell
Courtright	A. Meikle
Ponoka	D. Mercier
Royan	T. Gouin
Ignifer	
Elmhurst	J. Tuttie
Kinmount	J. Pendright
Fairmount	C. Thomson
Marmount	J. M. Clark
Rosemount	J. Neville

Warning Against Use of Impure Water

GEORGE A. MARR, secretary of the Lake Carriers' Association, has received a letter from Isador Mendelsohn, assistant sanitary engineer in charge of the Great Lakes district for the federal government, warning vessel owners and crews against the use of impure water for drinking and cooking purposes this season. Outbreaks of disease on lake ships and port shipyards have been minimized in recent years through sanitary regulations put into effect. Seamen taken ill because of impure water will be treated free at the U. S. Marine Hospitals on the lakes.

Lake Passenger Season Opens

THE earliest opening in the history of the Buffalo-Cleveland passenger steamer service is reported this spring by the Cleveland-Buffalo Transit Company. The first vessel to leave Cleveland for Buffalo started April 16. Freight service will be opened this spring by the company. Three outlying stations have been obtained for the use of shippers in addition to the facilities of the East Ninth street pier in Cleveland.

The state auto ferry, the *Mackinaw City*, April 15, began service between Mackinaw City, Mich., and St. Ignace.

The lake season officialy opened at Lorain the same date when the steamer *Francis E. House* cleared for Calcite, she being the first of 18 freighters which wintered at Lorain to leave port with a cargo.

Forty Coal Barges Ordered

THE Pittsburg Coal Company has awarded a contract to the Riter-Conly Company for 40 hopper type coal carrying barges, each of which will be 175 feet long, 26 feet wide and 11 feet deep. The company now has 30 similar barges in operation and a contract for 35 more will probably be awarded soon. Forty wooden barges now used by the company will be replaced by steel ones.

Personal

H. E. Gilpin, president of the Great Lakes Towing Company, who spent two months in Florida, has returned to headquarters in Cleveland.

A. T. Kinney, president of the A. T. Kinney Steamship Company, of Cleveland, has returned to his desk after spending two months in California.

Great Lakes Fleet Largest Ever Put Into Service

THERE are 437 steel cargo ships and 32 steel passenger ships now available for operating on the Great Lakes, all under the American flag, while 183 steel cargo ships and 21 steel passenger ships are listed as Canadian-flag vessels. In addition there are many tugs, wooden steamers, barges and steel car ferries under each flag. The combined fleet for 1927 will be the largest ever put into service. It is expected that the total tonnage movement of 121,290,000 tons in 1926 will be exceeded. This tonnage exceeded that of 1925 by 8,000,000 tons and was 260,000 tons above the previous high record of 1923.

Following are complete figures for the 1927 fleet as they will appear in the yearly list of ore vessels issued by the M. A. Hanna Company, of Cleveland

	Number of Vessels	Capacity Per Trip
Pittsburgh Steamship Co.	94	741,400
Interlake Steamship Co.	44	373,600
Hutchinson & Co.	22	190,500
Cleveland-Cliffs Iron Co.	23	164,500
Boland & Cornelius	20	154,000
Great Lakes Steamship Co.	20	149,800
The M. A. Hanna Co.	15	138,900
H. K. Oakes, manager	13	132,700
G. A. Tomlinson	15	130,800
Columbia Steamship Co.	10	90,700
Wilson Transit Co.	11	89,500
Reiss Steamship Co.	10	76,800
H. & G. M. Steinbrenner	5	46,500
H. H. Brown & Co.	5	45,300
Kinney Steamship Co.	5	42,600
Becker Steamship Co.	6	41,700
Interstate Steamship Co.	4	40,600
F. A. Bailey, manager	6	39,500
Shenango Steamship Co.	3	34,400
Valley Camp Coal Co.	6	34,100
C. O. Jenkins, manager	4	30,000
D. Sullivan & Co.	3	22,400
Ford Motor Co.	2	21,800
J. J. Barlum, manager	2	16,900
Brown & Co.	2	14,000
General Transit Co.	3	12,600
Peterson Steamship Lines	2	11,200
Wisconsin Steel Co.	1	9,800
Nassau Ship & Dredge Co.	2	9,800
R. M. Sellwood	1	6,800
Total	359	2,913,200

ADDITIONS		ELIMINATIONS	
Coulby	13,000	Taylor	6,700
L. E. Block	12,500	Regulus	6,700
Humphrey	11,500	Argus	6,700
Hobson	11,500	Hydrus	6,700
McLaughlan	11,500	A. Minch	6,000
Harvey	11,300	Way	5,000
Affleck	11,300		
Macbeth	5,500	Total	37,800
Total	88,100		

Launchings

The bulk lake freighter *Carl D. Bradley*, 638 feet long, was launched at the Lorain yards of the American Shipbuilding Company on April 9. Mrs. Carl D. Bradley, wife of the president of the Bradley Transportation Company, owner of the vessel and after whom it is named, christened the new freighter, which has a 65-foot beam and 33 feet depth. The new vessel will go into service on July 1.

Another launching on April 9 was the *A. F. Harvey*, a 600-foot freighter being built at the River Rouge yards of the Great Lakes Engineering Company, Detroit, for the Pittsburg Steamship Company. This vessel is described elsewhere in this issue.

The tug Kansas was launched on April 16 at the Cleveland yards of the Great Lakes Towing Company.

The Pere Marquette Lines Steamers, Ministee, Mich., is offering for sale the passenger and freight package freight steamer Pere Marquette No. 8, which is 171 feet long and 35 feet in width.

Generated on 2024-09-12 13:57 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Lake Carriers Hold 35th Annual Meeting

Lighthouse, Costing $100,000, Planned as Memorial to First President—Association to Pay Half of Cost—Officers Re-elected

MEMBERS of the Lake Carriers' Association, an organization whose membership takes in practically all of the transportation companies operating on the Great Lakes and whose combined fleets annually carry approximately 100,000,000 tons of coal, ore, grain and other freight, held one of the most successful meetings in the history of this far-flung traffic body on April 22, closing their deliberations with a big banquet at the Hollenden Hotel in the evening.

The carriers worked out tentative plans for erecting a memorial to their first president who served over 20 years, the late William S. Livingstone, of Detroit, Mich.

Livingstone Memorial Planned

Harry Coulby, head of the Interlake Steamship Company and known as the "Czar of the Great Lakes," introduced a resolution proposing that the association pay half the cost of the memorial. The resolution was adopted. According to tentative plans the memorial will take the form of a lighthouse built of stone, to serve as a range light, a life size figure of Livingstone in bronze, and tablets of the same material bearing the names of the donors, being features. The memorial will be erected at the east end of Belle Isle, Detroit. Originally it was planned to place the lighthouse in Livingstone channel, but Mr. Coulby explained that the lighthouse, if erected in the channel, would be seen only by ships using the channel.

Moreover, Mr. Livingstone was one of the park commissioners who secured Belle Isle as a park pleasure resort for his city. The estimated cost is $100,000.

There are 2,000,000 tons of shipping represented in the Lake Carriers' Association and it was suggested that two and a half cents a ton be levied over a period of three years to provide the $50,000 to be contributed by the association. The other $50,000 will be obtained through popular subscription in Detroit.

W. B. Mayo, of the Ford Motor Company, Detroit, told the association members the hydrographic department of the federal government will maintain the light in the memorial.

Mr. Livingstone was president of the Dime Savings Bank of Detroit, and otherwise influentially and financially interested in the city's commercial concerns.

Officers Re-elected

J. S. Ashley, who succeeded Mr. Livingstone, was re-elected president at the meeting. George A. Marr was re-elected scretary, and Newton D. Baker, former Secretary of War and mayor of Cleveland and president of the city's Chamber of Commerce, was re-elected general counsel.

C. J. Cornelius, of Buffalo, was made a director to succeed George B. Houseman. Other directors are:

J. S. Ashley, J. Burton Ayers, F. A. Bailey, Newton D. Baker, Fayette Brown, C. C. Canfield, Harry Coulby, R. W. England, A. H. Ferbert, A. F. Harvey, C. L. Hutchinson, Charles O. Jenkins, John T. Kelly, F. I. Kennedy, A. T. Kinney, George A. Marr, Walton H. McGean, Herbert K. Oakes, C. J. Peck, H. A. Rock, L. C. Sabin, W. P. Schaufele, A. E. R. Schneider, George M. Steinbrenner, W. G. Stewart, H. C. Strom, Carmi A. Thompson, A. W. Thompson, G. A. Tolinson, George H. Warner, and Joseph H. Wood, all of Cleveland.

J. J. Boland, J. C. Evans, J. B. Rodgers and C. J. Cornelius, of Buffalo; H. F. Hughes and A. C. Sullivan, of Chicago; C. D. Dyer and W. P. Snyder, Jr., of Pittsburgh; and H. S. Wilkinson, of Syracuse, N. Y.

Members of the advisory committee of the association are Messrs. Ashley, Coulby, Cornelius, Dyer, England, Harvey, Hutchinson, Kelly, Kinnet, Oakes and Schneider.

Miscellanous Business

The association accepted recommendations of shore captains that "deck crews be divided into watches and stand their regular watches while at sea; on boats where a boatswain is carried it is recommended that the boatswain be assigned to the mates' watch; where there is an unequal number of men, the extra man be assigned to the mates' watch."

Action on the proposed vertical hoist bridge over Duluth canal was referred to the shore captains' committee which will be increased by two active masters, and this committee will meet later with John Lyle Harrington and E. H. Howard, consulting engineers, of Kansas City, who drew the plans.

A. E. R. Schneider of the Cleveland-Cliffs Iron Company urged the association to take some action with a view of securing better provisions in the grain bills of lading so conditions will be covered both in the United States and Canada.

A. A. Wright, president of the Dominion Marine Association, of Toronto, Canada, said he agreed to Mr. Schneider's suggestion and the matter will be worked out later by representatives of the Carriers' and the Marine Association.

The matter of securing liability releases from men sailing vessels when they leave the service was referred to the executive committee.

Protective Association Holds Meeting

The Great Lakes Protective Association also held its annual meeting, following the adjournment of the Carriers, when Mr. Ashley, who is also president of the protective organization, presented his report.

He reported an excess of contributions for the fiscal year, 1926, of over $57,000, and, with this substantial surplus, he said there was considerable more loss than there should have been. Much of this, he added, was due to weather conditions at the opening and close of the navigation season.

A lively discussion started when he said the underwriters had declared a horizontal increase of three-eighths cent and even one-half in some cases. He said he could not induce them to recede from this position. Some of the members argued that the underwriters seem to be trying to compel the Protective Association to pay for losses sustained by non-paying members.

Arthur Sullivan, of Chicago, moved that efforts to have the underwriters declare a rebate in favor of paying members to be continued, and Mr. Ashley said he would take up the matter in this direction.

Growth of the Lake Carriers

L. C. Sabin was re-elected vice-president of the Lake Carriers' Association. The gathering of inland marine men was probably the most representative ever held in the United States. It was the 35th annual meeting and a delegation of United States Army and United States Shipping Board officials were present at the banquet. The present organization is the outgrowth of two earlier bodies. Over 40 years ago the Cleveland Vessel Owners' Association was formed in Cleveland for the purpose of supplying crews to lake vessels touching Ohio ports. In 1885 the first Lake Carriers' Association was formed in Buffalo, where the two were merged seven years later, the present association being incorporated January 26, 1903. With the passing of years its activities have developed enormously.

Despite the short season last year for navigation, President Ashley's annual report showed a 1926 freight movement of 121,289,000 tons of iron ore, coal, grain, stone and other materials.

The United States owned fleet now numbers, 407 steamers, while the Canadian fleet combined numbers 163 freighters, all steel bulk vessels, there also being 20 steel package freighters. The combined lake fleet of steel bulk freighters, barges and package boats is 646 ships, against 460 at the close of 1920.

Lake Shipowner Predicts Shipbuilding Activities Will Increase

THE story of iron and steel and the part Cleveland has played in it was told to over 2,500 Cleveland and other prominent business men during a luncheon at the Public Hall, in Cleveland on April 15, when Eugene G. Grace, president of the Bethlehem Steel Company, and H. G. Dalton, widely known in shipping circles, were the leading speakers. Among the vessels' interests represented were J. S. Ashley, president of the Lake Carriers' Association; Alfred G. Smith, president of the American Ship Building Company; George Humphrey, vice-president of the M. H. Hanna Company; James W. Corrigan, president of the Corrigan-McKinney Steel Company; David Croxton, general manager of the Cleveland Cliffs-iron Company; Herbert K. Oakes, vice-president, the Bethlehem Transportation Company; Captain Charles L. Hutchinson, president of the Hutchison Transportation Company; William McLaughlan, of the Pickands, Mather and Company, owners of the Interlake Steamship Company; E. J. Kulas, president of the Otis Steel Company, which is planning to operate a lake fleet to haul steel to Detroit and other lake manufacturing centers for automobiles.

Mr. Dalton, who is vice president of the Pickands, Mather and Company, and others touched on the importance of the Great Lakes in the marine industry of the country since the world war and predicted the present period of shipbuilding will increase because of the demands for lake freighters of greater capacity.

Welland Canal Opens

The Welland canal opened for navigation on April 16, two weeks earlier than last year.

Dry Dock for Sale

The Kraft Ship Yards and Dry Dock Company, 94th street and Calumet river, South Chicago, is offering for sale a wood floating dry dock which was recently rebuilt. The dock is equipped with new electric centrifugal pumps, is 65 feet wide and 8 feet deep.

Generated on 2024-09-12 12:35 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

TRADE PUBLICATIONS

MARINE GLUE.—Marine glue products and their use are the subject of a bulletin issued by L. W. Ferdinand & Company, Boston, Mass.

WELDING AND CUTTING EQUIPMENT.—A new pocket size 1927 junior catalog, illustrating and describing oxy-acetylene equipment, has been issued by the Smith Welding Equipment Corporation, Minneapolis, Minn. This junior catalog also contains price lists of Smith equipment.

SAFETY VALVES.—Ashton high capacity pop safety valves of various types are dealt with in a circular, No. C-2, issued by the Ashton Valve Company, Boston, Mass. Specifications and illustrations of these valves are contained, special attention being called to the C. S. H. style with outside spring suitable for a maximum steam pressure of 600 pounds per square inch.

"TRADE ROUTES AND SHIPPING SERVICE."—The statistical division, Merchant Fleet Corporation, has prepared a bulletin under this title in order to place before the American people, especially exporters and importers, in graphical form a true idea of the merchant marine services of the United States Shipping Board. A description of each Shipping Board service is given with an outline route map, a list of merchant ships in actual operation, the names and addresses of the managing operators and a brief synopsis of the trade peculiar to each route.

A HUNDRED YEARS OF STEEL IMPROVEMENT.—The International Nickel Company, Inc., New York, has issued a bulletin showing progress in the development of steels and the introduction of alloy steel—particularly nickel alloy steel, which is the latest addition to the industry. In outline form this bulletin contains a list of the important steps in the development of nickel and iron steel alloys, the various industries in which it is used and an outline of a publicity campaign for promoting the use of nickel steel as developed by the International Nickel Company.

GENERATOR AIR COOLER.—The Griscom-Russell Company, New York, has published a bulletin on the U-fin generator air cooler. The use of generator air coolers is steadily increasing as the advantages of a dust-proof, moisture-proof and fireproof closed cooling system for generator windings are becoming more generally appreciated. The present bulletin explains the application of generator air coolers, describes the special features of the U-fin cooler, includes a list of representative central stations and industrial plants equipped with this apparatus and illustrates a number of typical installations and their arrangements.

FLEXIBLE COUPLINGS. — Two bulletins issued by the Falk Corporation, Milwaukee, Wis., are devoted to an outline of the construction of the Falk flexible couplings (Bibby Patent), special features with diagrams, principles of operation, method of selecting couplings and a number of descriptions of typical installations in various industries.

FALK OIL ENGINES.—A bulletin containing a reprint describing the Falk Diesel oil engine taken from the *India Rubber World* has been sent out by the Falk Corporation, Milwaukee, Wis. The Falk engine is of the four-cycle, solid injection type. The article contains a complete technical description of the principles involved in its operation with numerous illustrations of typical engine installations.

BUSINESS NOTES

The Kearfott Engineering Company, Inc., of 95 Liberty street, has moved to the Roebling Building, 117 Liberty street, New York.

Funch, Edye & Company has established a tank steamer department in the office at 25 Broadway, New York, with Leo Tighe in charge.

The Electric Storage Battery Company, Philadelphia, Pa., has opened its newly erected Philadelphia factory branch. This branch is under the management of W. C. Hooven.

The New York Engineering Company has moved its offices from 2 Rector street to 75 West street, New York City. The telephone number of the company remains unchanged, Whitehall 5380.

Fairbanks, Morse & Company of Chicago, Ill., has taken over the scale business of the Fairbanks Company, New York. This company will continue to manufacture valves and other equipment at Binghamton, N. Y.

The Crosby Marine Corporation, founded by Roy W. Crosby in 1921, has moved its headquarters from Seattle to San Francisco, Cal. Mr. Crosby also was the organizer of the Crosby Fisheries of Seattle, but has now relinquished the presidency of the latter company. Capt. Harry W. Crosby has been elected to that office and will take over the active management of the corporation.

A new company known as the Bailey Meter Company on April 1 acquired the flow meter business and patents of the General Electric Company and the fluid meter and combustion control business and patents of the present Bailey Meter Company. The engineering, manufacturing and sales organization of the present Bailey Meter Company will be retained by the new company, with the increase in personnel necessary from the General Electric Company to handle properly the additional business. The new company will have its factory and general offices in Cleveland, Ohio. E. G. Bailey, president of the present Bailey Meter Company, is president of the new company. R. S. Coffin, vice president of the present Bailey Meter Company, is vice president in charge of administration and finances. R. E. Woolley, formerly connected with the General Electric Company, is vice president in charge of engineering and sales. The new Bailey Meter Company will offer a complete line of flow meters, boiler room instruments and combustion control equipment.

Marine Societies

America

American Marine Association. 30 Church St., New York. President—Col. E. A. Simmons.

American Marine Standards Committee. Chairman, Colonel E. A. Simmons. Secretary, A. V. Bouillon, Division of Simplified Practice, Department of Commerce, Washington, D. C.

American Society of Marine Designers. Secretary—B. G. Barnes, 202 Kendrick Ave., Quincy, Mass.

American Society of Marine Engineers. 605 Market St., San Francisco, Calif. President—Henry F. Gelhaus. Secretary—Wm. H. Thille.

American Society of Naval Engineers. Navy Department, Washington, D. C. Secretary-Treasurer—Commander H. B. Hird, U. S. N., Bureau of Engineering, Navy Department, Washington, D. C.

American Steamship Owners' Association. 11 Broadway, New York. President—Alfred Gilbert Smith.

Atlantic Coast Shipbuilders' Association. 1600 Walnut Street, Philadelphia, Pa. Secretary—C. S. King.

Council of American Shipbuilders, Inc., 30 Church St., New York. President—Homer L. Ferguson. Secretary-Treasurer—Henry C. Hunter.

Jersey Marine Club, 4th and River streets, Hoboken, N. J. President—Col. Bartlett.

Lake Carriers' Association. President—J. S. Ashley. Secretary—George A. Marr, Rockefeller Building, Cleveland, O.

National Association of Engine and Boat Manufacturers. 29 West 39th Street, New York City. Secretary—Ira Hand.

National Association of Masters, Mates and Pilots. National Secretary—M. D. Tenniswood, 308 Vine St., Camden, N. J.

National Marine Engineers' Beneficial Association. Headquarters, 311-315 Machinists Building. Washington, D. C. President—Wm. F. Yates. Secretary—Albert L. Jones.

National Merchant Marine Association. Munsey Bldg., Washington, D. C. President—Hon. J. E. Ransdell.

Neptune Association. 21 Pearl St., New York City. Secretary-Treasurer—Captain John F. Milliken.

New York and New Jersey Dry Dock Association, 111 Broadway, New York. President—Jonathan Moore.

Ocean Association of Marine Engineers. 15 Whitehall St., New York. Secretary—Bert L. Todd.

Port of New York Authority. 75 West Street, New York. Chairman—George S. Silzer. Secretary—Wilson J. Vance.

Society of Naval Architects and Marine Engineers. 29 West 39th Street, New York. Secretary and Treasurer—Daniel H. Cox.

The Maritime Association of the Port of New York. 78 Broad St., New York City. President—John Dowd. Secretary—John F. Manning.

The New York Tow Boat Exchange. 11 Moore St., New York. Manager—Charles A. Mason.

The Propeller Club of the Port of New York. President—Harry W. Parsons, 111 Broadway, New York. Secretary—W. Z. Gardner, 32 Broadway, New York.

United States Naval Institute. Naval Academy, Annapolis, Md. Secretary and Treasurer—Captain H. A. Baldridge, U. S. N.

United States Ship Operators' Association. 149 Broadway, New York. President—Winchester Noyes.

Canada

Grand Council N. A. of M. E. of Canada. Grand Secretary-Treasurer—W. A. MacDonald, 62 Albert St., Halifax, N. S.

Great Britain

Institute of Marine Engineers, Incorporated. 85/88 The Minories, London, E.1.

Institution of Engineers and Shipbuilders in Scotland. 39 Elmbank Crescent, Glasgow.

Institution of Naval Architects. 5 Adelphi Terrace, London, W. C.

North East Coast Institution of Engineers and Shipbuilders. Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

France

Association Technique Maritime et Aéronautique. Secrétariat Général—7, rue de Madrid, Paris (8e).

Italy

Collegio Degli Ingegneri Naval e Meccanici in Italia.

Generated on 2024-09-12 12:29 GMT / https://hdl.handle.net/2027/mdp.39015080127585
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF MICHIGAN